Dental Digest

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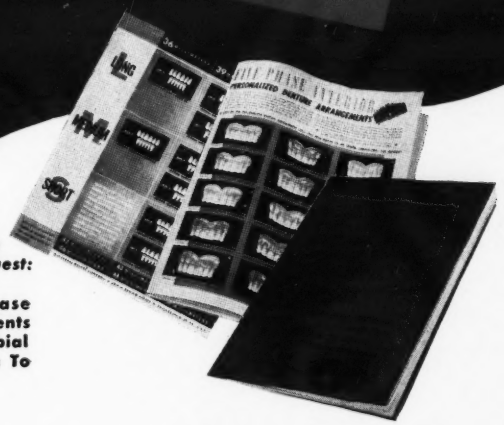

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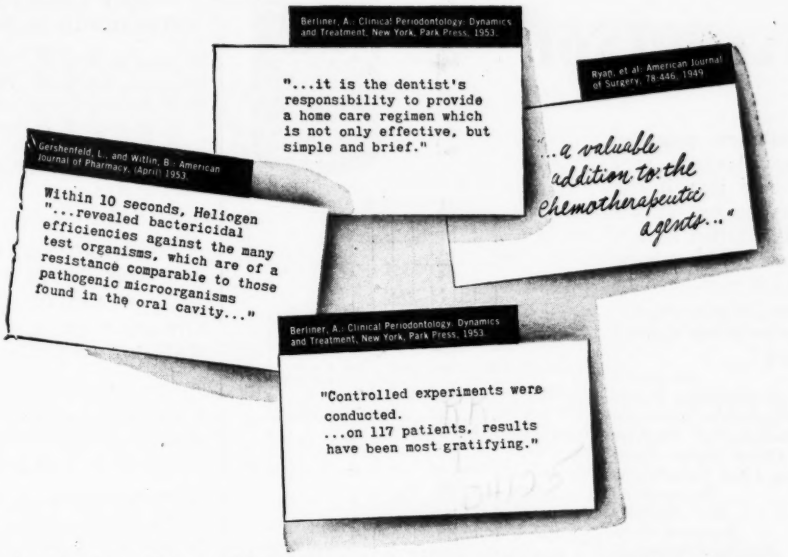
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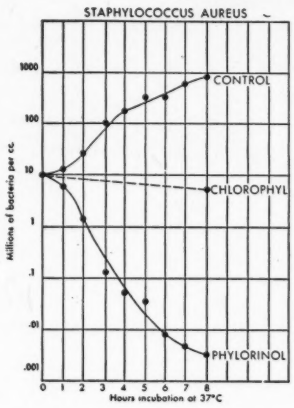

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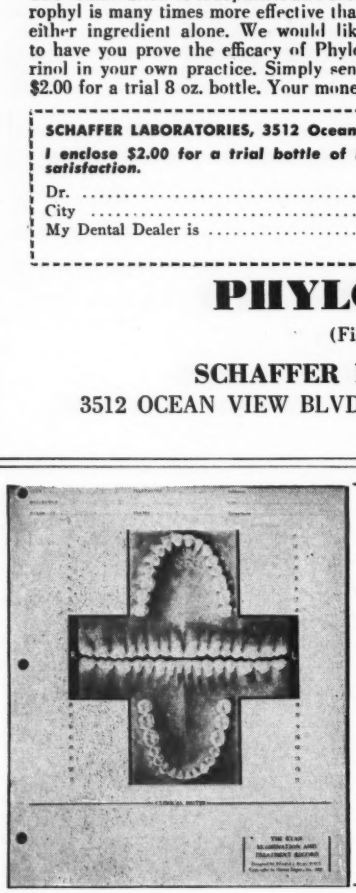

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About Our CONTRIBUTORS

LLOYD N. HOLLANDER, B.S. (Western Reserve University, 1939), D.D.S. (Western Reserve University, School of Dentistry, 1941) is a member of several professional associations, among them the American Association of Endodontists, and the American Society of Psychosomatic Dentistry. For his first publication in DIGEST, Doctor Hollander presents THE PSYCHOLOGIC APPROACH TO INJECTION TECHNIQUE FOR LOCAL ANESTHESIA.

J. MALCOLM BOOTH, B.S. (Brigham Young University, 1940), D.D.S. (College of Physicians and Surgeons, School of Dentistry San Francisco, 1944) is a general practitioner. Doctor Booth's first presentation in DIGEST, INDIRECT BRIDGE CONSTRUCTION USING A SINGLE MODEL FOR CASTING AND SOLDERING, is based on the experience gained in eight years of study and demonstration of bridge construction technique.

MURRAY N. RUBINSTEIN, D.D.S. (New York University, College of Dentistry, 1924) has published a number of articles on a variety of dental subjects, several of which have appeared in DIGEST. This month Doctor Rubinstein describes a simple restorative procedure which he has found extremely useful, IMMEDIATE ACRYLIC TEMPORARY CROWN AND BRIDGE.

MELVIN E. PAGE, D.D.S. (University of Michigan, College of Dentistry, 1919), and D. L. BROOKS, A.B. (Wheaton College, Norton, Massachusetts, 1931) present the fifth installment of their serial article, BODY CHEMISTRY IN HEALTH AND DISEASE.

JOHN C. DEVINE, D.D.S. (Ohio State University, School of Dentistry, 1914) who last published in DIGEST in 1944 is listed in Volume One of AMERICA'S DENTAL LEADERS, published by Distinction Press, Chicago. Doctor Devine's current presentation is THE USE OF HYALURONIDASE TO PREVENT POSTOPERATIVE COMPLICATIONS.

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The Psychologic Approach to INJECTION TECHNIQUE *for Local Anesthesia*

LLOYD N. HOLLANDER, B.S., D.D.S., Cleveland, Ohio

DIGEST

Dental literature contains much material describing injection procedure, anatomy, and the chemical composition of anesthetic solutions, but little information is available concerning adequate psychologic preparation of the patient for the anesthetic experience. Rather than to probe into the complex causes of emotional disturbances, the object of this article is to present a simple and practical method of using a dental syringe in a way to relieve the preanesthetic tension in the majority of patients.

Fear a Deterrent to Dental Treatment

One of the reasons for neglecting or postponing dental treatment is fear. With the development of anesthesia and improved techniques, pain no longer need be anticipated in the dental chair. The patient is prepared for pain control but there still exists fear of the necessary injections, or the "needle," used to administer local anesthesia.

Use of Sedatives—Among the methods employed to banish preanesthetic apprehension are the various sedative agents. These are not always practical, however, and are also frequently contraindicated.

Common Symptoms of Fear—Syncope is a common occurrence following anesthetic injections in many offices. The reasons given for fainting are overstimulation from the epinephrine used in local anesthetics, possible allergic reactions, and other idiosyncracies.

Cause May be Psychogenic—It is the author's opinion that most cases of syncope occurring under these conditions are psychogenic. Most authorities agree that fainting is commonly the result of shock arising from fear. It therefore seems reasonable to believe that inhibition of fainting, or relief of "needle fear" lies in the psychologic approach and method of handling the patient.

Reasons for Fear—In general, patients fear the injections of local anesthetics for the following reasons:

1. Pain.
2. Subconscious fear of tissue puncture.
3. Fear of lack of control and disfiguration of the area anesthetized.
4. Fear of heart palpitation.
5. Fear of the "dead feeling," or "frozen" sensation in the tissue.
6. Sight of the syringe and the needle.

Reassurance of Patient

If patient fear can be simply relieved by ordinary conversation, much of the tension occurring at dental appointments will disappear; time consumption as well as other disadvantages of premedication will not be a problem.

Establishment of Confidence—By commenting in a confident voice that local anesthesia is a safe and valuable way of eliminating pain and that the loss of feeling in the zone affected is only *temporary*, the dentist can put the patient at ease.

Lack of Sensation Temporary—It can be quietly explained that there is no loss of muscle control, only lack of sensation in the area involved, and that this is temporary.

Heart Action not Directly Affected—Reassurance that the heart action is not affected is important, particularly when employing some of the solutions in current use in which the adrenalin content is only 1:100,000, or is even completely eliminated.

Constant Reassurance Required—Bear in mind that while many patients are aware of the facts concerned, they need repeated assurance of known conditions. The following series of practical steps to allay apprehension have been found useful.

Step One

All equipment must be kept out of sight. After the patient is seated, explanatory remarks may be offered in a conversational tone: "As you know, there is no longer any reason for discomfort during dental treatment. We are going to use some solutions that will keep you from having any pain sensation whatever."

Casual Manner Adopted—The operator's general attitude will be reflected in the patient. His manner should therefore be casual as he explains briefly that the lip and teeth will presently feel numb but that in a few hours the numbness will disappear completely without any aftereffects. He may also remind the patient that with the solutions now in use almost all former reactions, such as rapid heart beat, have been eliminated.

Address Assistant in Code—When asking the dental assistant to prepare the syringe, designate the one desired by a code such as: "One 'S' please," or "one 'L' please." It is understood that "S" denotes a syringe mounted with a one-inch needle, or the short one; "L" means the long needle, or the 1⅞-inch size. The use of code avoids the use of terms with

1. *This photograph shows the dental assistant handing the dentist the syringe from the left side of the patient. Note that it is being passed over the shoulder and under the chin with the dentist's hand keeping the patient from seeing the procedure.*

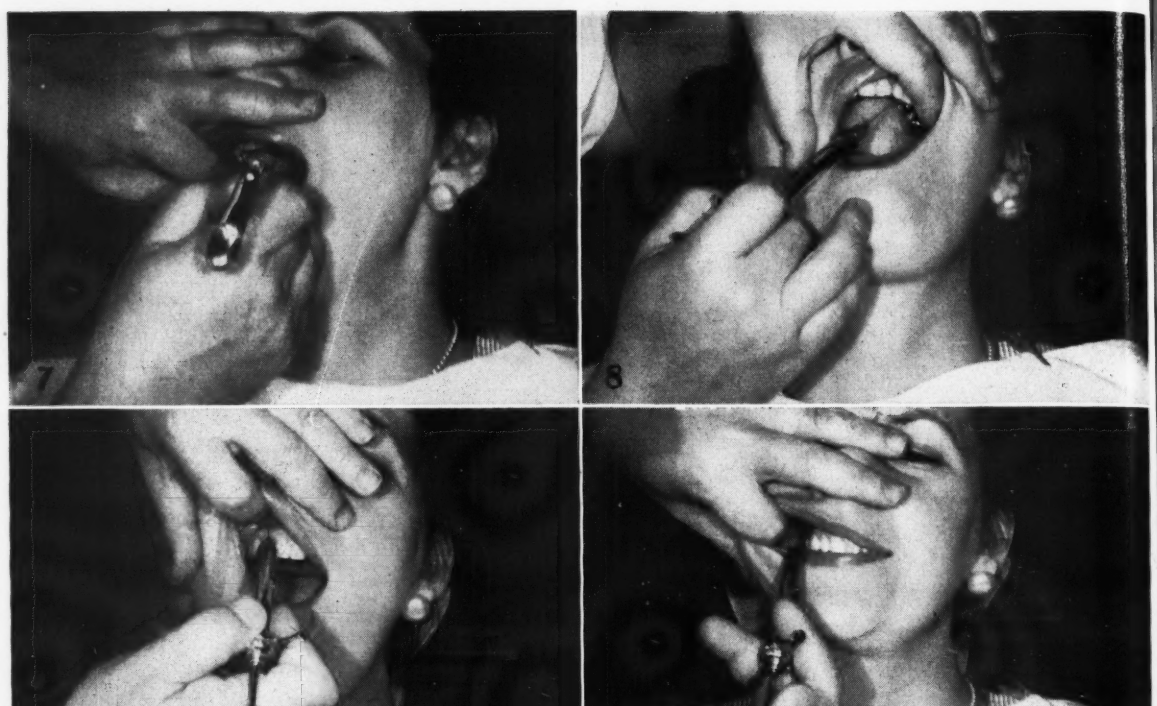
2. *This picture demonstrates the manner in which the syringe is passed from the right side of the patient. The principle is the same as that in Figure 1.*

3. *This picture shows the hand positions in making an infiltration injection for the lower left region. Note again the covering of the eyes of the patient with the left hand. It would take great effort on the part of the patient to view the syringe.*

4. *The position demonstrated is for the left mandibular block. The hand positions are essentially the same as for any lower injection.*

5. *Method of an injection for infiltration anesthesia of the lower anterior teeth and mucosa is shown. In this instance the fingers of the dentist's left hand are used to cover the eyes of the patient. There is, of course, absolutely no pressure brought to bear upon the eyes or head of the patient by the operator's arm or fingers.*

6. *The lower right position for infiltration anesthesia which would be the same for blocking the mental nerve. There is no pressure of the fingers on the nose.*



7. ***Shows the right mandibular block position.***

8. ***View of the palatal injection of the left side. Note the complete covering of the patient's face with the dentist's left hand. This is done so that the dentist can gently aid the patient to turn the head toward the needle as described in the text.***

9. ***The hand positions used for injecting the upper anterior area are shown. The left hand retracts the tissues and at the same time blocks the syringe from the patient's sight.***

10. ***The hand position used for infiltration anesthesia of the upper bicuspid region. The same positions would be used in a zygomatic injection. Again note the covering of the eyes with the fingers to obstruct the patient's view of the needle.***

unpleasant connotations for the patient.

Step Two

While the assistant is loading the syringe with a cartridge, the dentist should prepare the mouth with a topical anesthetic or antiseptic solution as desired.

Step Three

Placing the right hand in the proper position to receive the syringe from the assistant, spread the tissues for injection and at the same time *cover the patient's eyes* with the left hand so that the syringe cannot be seen. This is extremely important. Asking the patient to close his eyes is not usually sufficient. Patients attempt to see as much of the equipment as they can, even though they may be frightened by it.

Step Four

The finger used to spread the tissues in the mouth should be brought to bear with slight pressure. At the moment of needle insertion the pressure should be increased so that the tissue is *brought over the needle,* rather than to thrust the needle into the tissue.

Palatal Injections—As soon as the needle is approximating the palate, request the patient to turn his head gently toward you. This will automatically bring the tissue into contact. At the same time, the needle is *slowly* and *gently* inserted.

Effective Injection Technique—The difference in sensation in bringing the tissue to the needle rather than thrusting the needle into the tissue is impressive.

Conclusions

Almost all of the fear of anesthetic injections can be eliminated by the proper psychologic approach to the patient. This approach consists of brief reassuring conversation, preventing the procedure from being seen, and bringing the tissue to the needle rather than the reverse.

531 *East* 185*th Street.*

Indirect BRIDGE CONSTRUCTION

Using a Single Model for Casting and Soldering

J. MALCOLM BOOTH, B.S., D.D.S., Billings, Montana

DIGEST

The technique presented herein is designed to overcome the undesirable features in fixed bridge construction, a procedure which is often neglected in restorative dentistry because of the time-consuming factor and the possibility of errors. A single stone die without dowels is used for the two-appointment technique described. Hygroscopic expansion, low burn-out temperature, full arch articulated models, and the useful elements of alginates and hydrocolloids are employed. Repeated try-ins on a single hard stone die which can be removed from the arch and the advantages of vacuum investing are included in the technique. Among investigators responsible for the research contributing to the technique are Skinner,[1] and Thompson.[2]

Impressions

The following steps are taken to complete the impression:

1. While injecting have the assistant prepare a tray of alginate impression material and take a full impression of the arch opposing that on which the bridge is to be constructed. Pour in stone.

2. After completing the cavity preparations, wrap a piece of 20-gauge kite string around each abutment tooth and tie with an overhand knot. Where a full crown is used, eliminate the knot and approximate the ends of the string. Push the string gingivally until all the cavity margins are visible. When medication is needed, dampen the string with 40 per cent zinc chloride solution before exposing the margins (Fig. 1). Dental floss can be looped over the string, the floss placed through the contact area, and the string drawn between the teeth if a Class 2 abutment preparation is being used.

3. Hydrocolloid which has been boiled for eight minutes, then cooled to 140° Fahrenheit, is used in a syringe designed for the purpose to fill the cavities which have been dried. During this procedure the assistant should fill a sectional water-cooled tray with hydrocolloid previously boiled, then cooled to 115° Fahrenheit (Fig. 2).

4. The impression is completed and held in place with a steady pressure for five minutes before removal (Fig. 3). Either end of the tray is built up with boxing wax to trap the hydrocolloid and to keep the teeth from striking the tray.

5. Cool the impression with room temperature water, place in a humidor, and pour as soon as possible.

Pouring and Mounting the Impressions

1. Paint the hydrocolloid impression with a hydrocolloid surface conditioner, (Fig. 4) dry with compressed air, and pour with a low expanding densite type of stone which has been vacuumed. Let the stone set for one hour in a 2 per cent solution of potassium sulfate. Separate it from the hydrocolloid impression.

2. Trim the approximating teeth from either side of the abutment teeth. Taper the die to facilitate removal from the stone arch. Lubricate all sides of the tapered die with vaseline, and place the model in correct position in the full arch alginate impression which has been stored in a solution of potassium sulfate while the sectional stone die was setting. Seal the margins with soft wax to prevent a seepage of stone into the preparations (Fig. 5).

3. Pour the impressions in stone and separate them when they are set. After the models have set, trim the base of the model holding the bridge abutments until the base is exposed. A slight tap will remove the die. All margins are easily accessible for wax carving while the relationship between the abutments is maintained.

4. The die should set for twenty-four hours to attain sufficient hardness. It is then covered with a heat-resisting grease or oil to provide a smooth working surface.

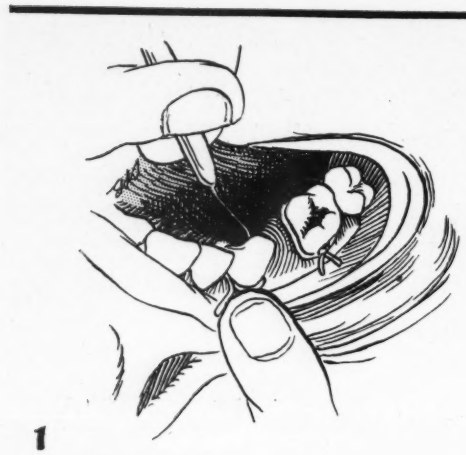
5. Mount the die on an articulator. Expose all gingival margins with a carborundum disc or small round bur to facilitate wax carving. Trim the contact areas of the teeth in the stone model which approximate the abutment teeth with a sandpaper strip to ensure a tight contact area in the finished case.

6. Burnish tin foil over the teeth on the model opposing the bridge to guard against overocclusion.

7. Wax the abutments, lubricate the sides approximating the pontics, and wax the pontics. Hold the pieces in place with a quick setting plaster matrix.

[1] Skinner, E. W.; Cooper, E. N.; and Beck, Frank E.: Reversible and Irreversible Hydrocolloid Impression Materials, JADA **40**:196 (Feb.) 1950.

[2] Thompson, M. J.: A Standardized Indirect Technic for Reversible Hydrocolloid, JADA **4**:1 (Jan.) 1953.



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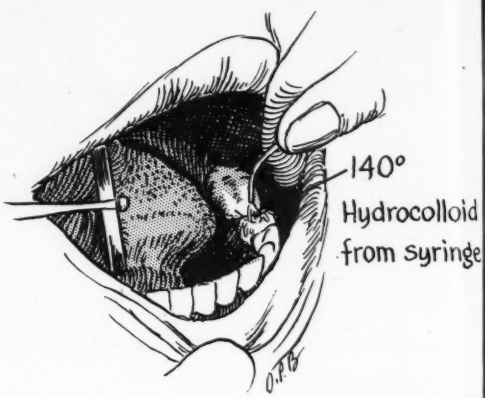

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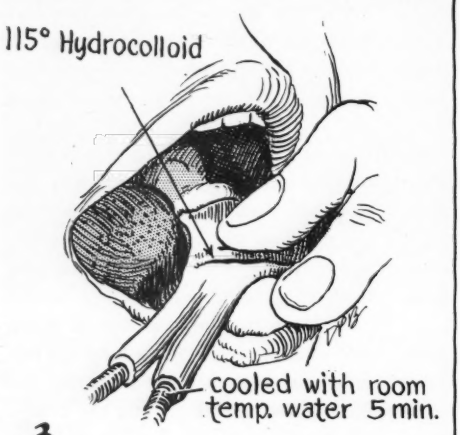

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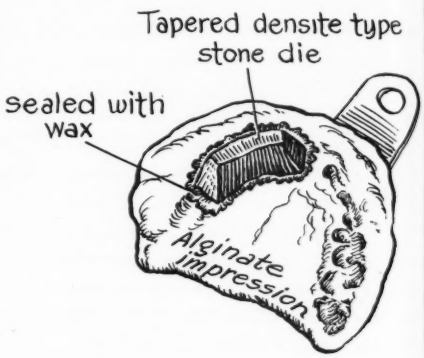

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1. *Twenty-gauge kite string is used to expose gingival cavity margins.*

2. *One hundred forty-degree hydrocolloid from syringe designed for that purpose is used to cover cavity preparations.*

3. *A sectional water-cooled tray filled with hydrocolloid cooled to 115 degrees is placed over the abutment preparations.*

4. *The sectional impression is dried, covered with hydrocolloid surface conditioner, dried again, and filled with vacuumed densite type stone.*

5. *Tapered densite type stone die is placed in the full mouth alginate impression, sealed with wax, greased, and the entire impression is poured in stone.*

6. *Tapered densite type stone die is removed with a slight tap at the base of the full arch model and margins exposed to facilitate proper wax-up, the parts cast, the sprues cut off at the button, and all parts held together with a wipla metal bar and electric solder, thus saving the original die.*

7. *The pieces held together with the bar are covered with quick setting plaster to prevent melting of the solder bar. The facing is removed, and the margins are covered with anti-flux. The parts are soldered with a torch, the sprues are cut off, and the bridge is articulated on the original die and full arch model.*

8. Sprue all the parts so that the sprues are parallel faciolingually on the model. Invest hygroscopically and cast all parts separately.

9. Cut off the sprues as close to the button as possible. Lubricate the die and castings. The porcelain part of the pontic is left on the pontic. With the aid of the original matrix, the parts are assembled on the die and tacked in place with quick setting plaster, The proximals of the pontics and abutments should all touch to prevent shrinkage of the bridge caused by solder.

10. With the bridge in place on the die, place a short length of twelve-gauge wipla metal bar on the sides of the far ends of the sprues (Fig. 6). Tack one end of the bar with quick setting plaster to steady the parts. Flux and solder the bar to the sprue ends with an electric soldering machine. Quick heat of the electric soldering machine prevents damage to the die and porcelain.

11. The bridge is held by the wipla metal bar solder to the sprues (Fig. 7). It is removed from the stone die, the facings are removed, and the bar is covered with quick setting plaster to prevent the solder from melting. The margins of the bridge are antifluxed with a lead pencil, and without using any soldering investment which might cause expansion, the bridge is soldered in the conventional manner with a torch.

12. Cut off the sprues and polish on the original stone die. Check the occlusion on the articulator. At the second appointment place the bridge in position.

Alternative Soldering Technique

If the operator wishes to eliminate the use of electric soldering, the following technique may be employed:

1. Substitute for the wipla metal bar a twelve-gauge gold bar. With the parts held in place on the die, tack the parts together just above the occlusal surfaces, leaving space for the bar on the ends of the sprues.

2. Remove the piece from the die. Remove the facings and solder the bar to the sprue ends with a torch. Try the bridge on the die for accuracy.

3. Complete the case in the manner outlined in the first procedure.

Summary of Advantages

Designed to eliminate as many of the frequently encountered errors as possible the technique described has the following advantages:

1. Full mouth alginate impressions may be taken to ensure accurate occlusion.

2. A single hard stone die including both abutment preparations is used which can be removed from the arch for accurate carving and which can be kept undamaged throughout the construction of the bridge.

3. With reasonable care the shrinkage of the gold is compensated for by the hygroscopic, thermal, and setting expansion of all the materials involved.

4. Two appointments only are required for the patient.

5. Total chair time is approximately two hours depending upon the speed of the operator.

Comments

1. The technique discussed is new in certain details and should be practiced on a model before it is used in the mouth.

2. The only variations in results are those contingent on inequalities in the skill of operators and inconsistency in the quality of materials.

3. The technique may be altered and applied to restorative procedures ranging from indirect single or multiple inlays to precision cases and mouth rehabilitation.

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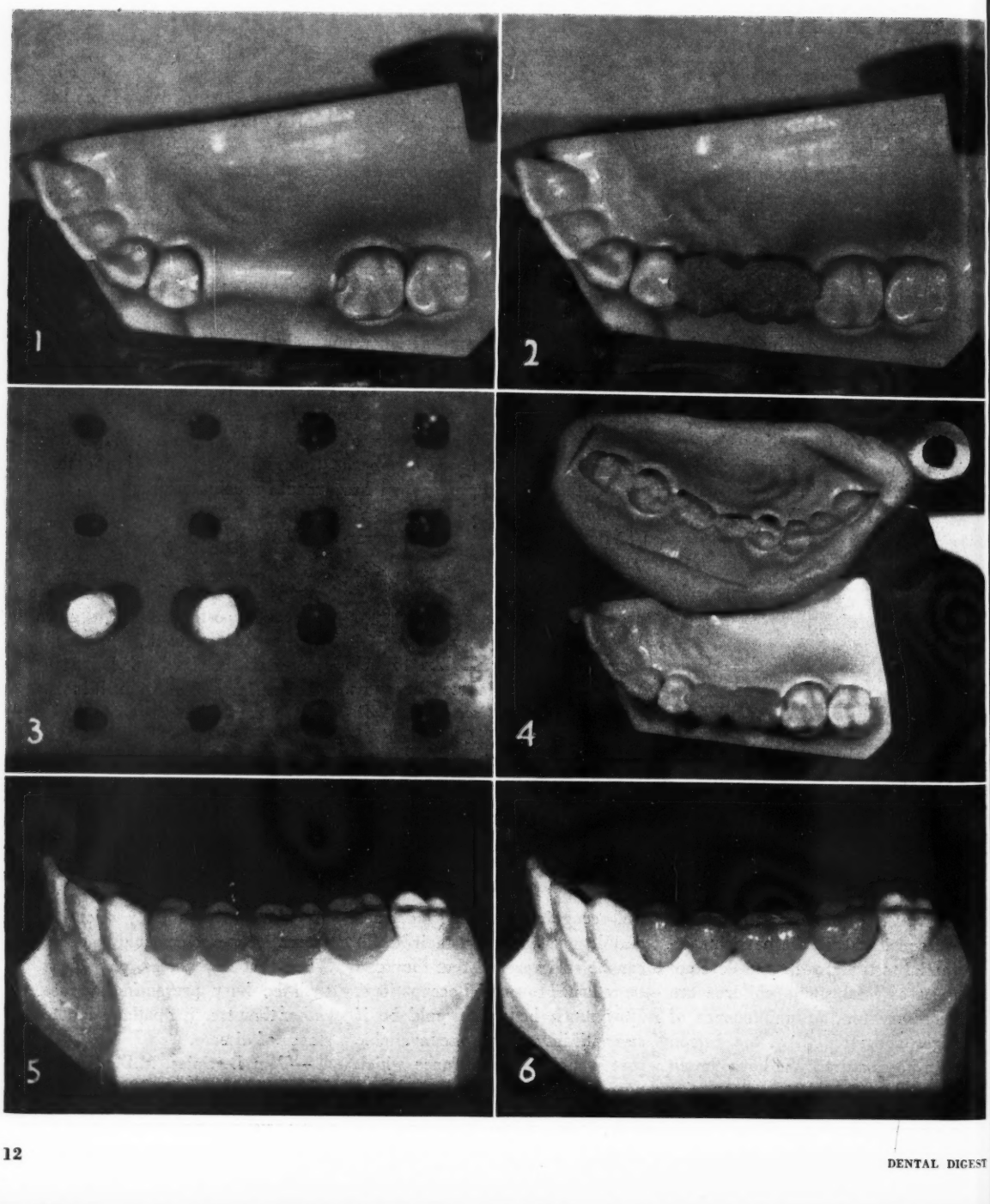
AS A PART of our over-all concept, we consider that the nutrients essential to the growth and development of infants and children are necessary for the maintenance of vigor and strength of the person who has matured. We have chosen a number of older persons with well-recognized chronic syndromes and demonstrated that their health can be so improved that they can be returned to gainful occupations. How much better it would be if susceptibility tests were available that would tell in advance which persons should be observed and for what, so that truly scientific preventive medicine could be done. When that day comes, physicians shall be busy preventing disease rather than treating patients in late stages of disease.

—Tom D. Spies, M.D.: JAMA **153**:185-193 (Sept. 19) 1953.

Immediate Acrylic

Temporary CROWN *and* BRIDGE

MURRAY N. RUBINSTEIN, D.D.S., New York



DIGEST

An extremely useful addition to restorative procedures is the immediate acrylic temporary crown or bridge which ensures patient comfort and esthetics in crown and bridge restoration. The procedure for the technique described in this article is uncomplicated and the result is highly gratifying.

Procedure

1. If the case calls for a bridge replacement, cut a box on each of the proximal surfaces adjacent to the space (Fig. 1). These boxes will act as keys to hold wax teeth fitted to the space and occlusion (Fig. 2).

Use of Wax Teeth—Wax teeth may be secured from a soft rubber wax tooth former (Fig. 3); namely, The Perfectone Pliable Rubber Tooth Moulds, manufactured by the Perfectone Company of New York City.

Method—Soften white inlay wax and press into the required mould. When cool the tooth can be popped out and fitted to the space. When contact and occlusion are acceptable, attach to the teeth with a warm spatula.

2. Take an alginate impression of the tooth or teeth to be worked on, including at least one or two teeth adjoining to be used as stops. If the preparations are to be for veneer crowns, using a sharp surgical blade, cut off a little of the lingual gingival margin of the teeth to be prepared in the alginate.

Additional Measures

1. The additional space will provide a little more bulk in the finished acrylic pattern which can be trimmed later. If the preparation is to be of the full shoulder type, no trimming is necessary.

2. Place the impression in cold water. Complete the preparations. Sterilize the teeth in the usual method and lubricate the teeth.

3. Prepare a thin mix of the fast cure acrylic material. To hasten setting time, rinse the impression previously taken in hot water and dry thoroughly. Have the patient rinse the mouth with warm water.

4. Place the soft acrylic material in the impression at the site of the teeth prepared and force the impression into position. Hold in position about five minutes.

5. Remove the impression. The acrylic pattern may come out with the impression or may be in position on the teeth (Fig. 5). Ease the pattern out in either case, trim the gingival satisfactorily, and polish (Fig. 6).

6. Cementing may be accomplished with temporary cementing medium such as Wondrpak, mixed with a little vaseline. The temporary acrylic restorations can be removed and replaced exactly, as often as necessary without adding additional cement.

200 *Central Park South.*

1. ***Box cut on proximal is shown.***
2. ***Wax teeth tacked in position.***
3. ***Wax tooth former.***
4. ***Alginate impression of bridge area.***
5. ***Acrylic pattern on removal from alginate impression.***
6. ***Acrylic bridge completed and polished.***

Man and His Arteries

ATHEROSCLEROSIS of the coronary arteries is the major cause of death in the most economically productive age period of the American male. Between 1920 and 1947 the death rate for white males in the United States, between the ages of 35 and 65, doubled, while that of the white female remained stationary, or decreased, and this great increase is obvious only in the group of cardiovascular-renal diseases. *It seems clear that some factor which is peculiarly lethal for the male is operating selectively in our population.*

There is reason to believe that the increase in fat in the American diet, which is an index of prosperity, is a significant factor in this preponderance of coronary disease in morbidity and mortality. Thus the matter of prevention involves the broad area of nutrition, obesity and dietary habits of the entire population, as well as the even more complex variables of heredity, body type and endocrine controls. The activity of research in the whole field of atherosclerosis gives hope of eventual understanding of the degree to which this process is preventable and reversible.

If it is true, as has been stated, that at least 50 per cent of men over 45 years of age have some degree of coronary degeneration, then few of us can contemplate this age period with complacency.

From *Medical Clinics of North America* **37**:No. 5, 1283 (*September*) 1953.

Importance of Nutrition and Metabolism

IT SHOULD be recalled that the chemical equilibrium of the human body is preserved in many ways and that the maintenance of this equilibrium becomes more and more difficult as the stores of protective substances are depleted by various disease processs. It is clear that many persons have placed too narrow a significiance on the importance of nutrition and metabolism in the general physiological process. Patients must have an adequate intake of the needed nutrients, which must be properly assimilated and utilized, if the physician is to be expected to take the best care of them.

—Tom D. Spies, M.D.: JAMA **153**:185-193 (Sept. 19) 1953.

BODY CHEMISTRY

in Health and Disease—Part Five

MELVIN E. PAGE, D.D.S., and D. L. BROOKS, A.B.,
St. Petersburg, Florida

DIGEST

The problem of andric-gynic balance is important, engrossing, and extremely complicated. It is common knowledge that in varying amounts both men and women produce both of the sex hormones. It is recognized that there are definite pathologic mutations in sex characteristics and manifestations. The problem has been to detect, by means of body measurements, evidence of slight divergence from perfect balance in andric and gynic factors as related to inefficient body chemistry. Studies of patient histories demonstrate calcium-phosphorus and blood sugar response to both estrogen and testosterone. Graphed measurements and results of blood tests after treatment show the opposition of endocrine patterns in successfully married people. Two case histories are described in which the individuality of treatment by this approach is portrayed and similar results in blood composition following the use of opposing endocrines are demonstrated in these cases. Treatment in this approach is definitely based upon measurements and blood interpretation rather than upon disease symptomatology. The need is emphasized for experience in correlation of personality factors, blood results, and graph interpretation in relation to andric-gynic determinations.

Pathologic Mutations Noted in Sex Characteristics and Manifestations

Draper,[1] in *Human Constitution and Clinical Medicine*, noted a preponderance of certain disease types in men as opposed to women, and masculine characteristics in the lesser number of women who were subject to the same disease type. Sheldon,[2] in somatotyping large groups of people, made allowance for divergencies in male and female characteristics of physique and temperament. The contemporary layman is aware of the possible relationship between cancer and the use of estrogen, the female sex hormone.

Problem—In general, certain qualities of masculinity or in femininity are associated with each of the two sexes. In this technique the problem has been to discover, through body measurements, evidence of slight divergence from perfect balance, to relate andric and gynic factors to inefficient body chemistry.

Significance of Andric-Gynic Imbalance—As stated earlier in this series of articles, the measurements for andric-gynic determinations are only 80 per cent correct. The reason for this is not known. But it is an established fact that the effect produced by the use of minute amounts of estrogen and androgen opens vast possibilities for research. There should be an increasing awareness of the pathologic significance of andric-gynic imbalance. Analysis of the graphs included in this installment will develop this point of view.

[1]Draper, George; Dupertuis, C. W.; Caughey, J. L., Jr.: Human Constitution and Clinical Medicine, New York, Paul B. Hoeber, Inc., 1944.
[2]Sheldon, William H.: The Varieties of Human Physique, New York, Harper & Brothers, 1940.

Analysis of Figure 38

Figures 38 and 39 demonstrate the response in calcium-phosphorus blood levels to each of the sex hormones. The reading of the first graph (Fig. 38) is hyperthyroid, hyperposterior pituitary, hyperanterior pituitary. It will be noted that the starting point of the graph is above the andric-gynic *arrow;* in other words, the patient, though a male, is gynic.

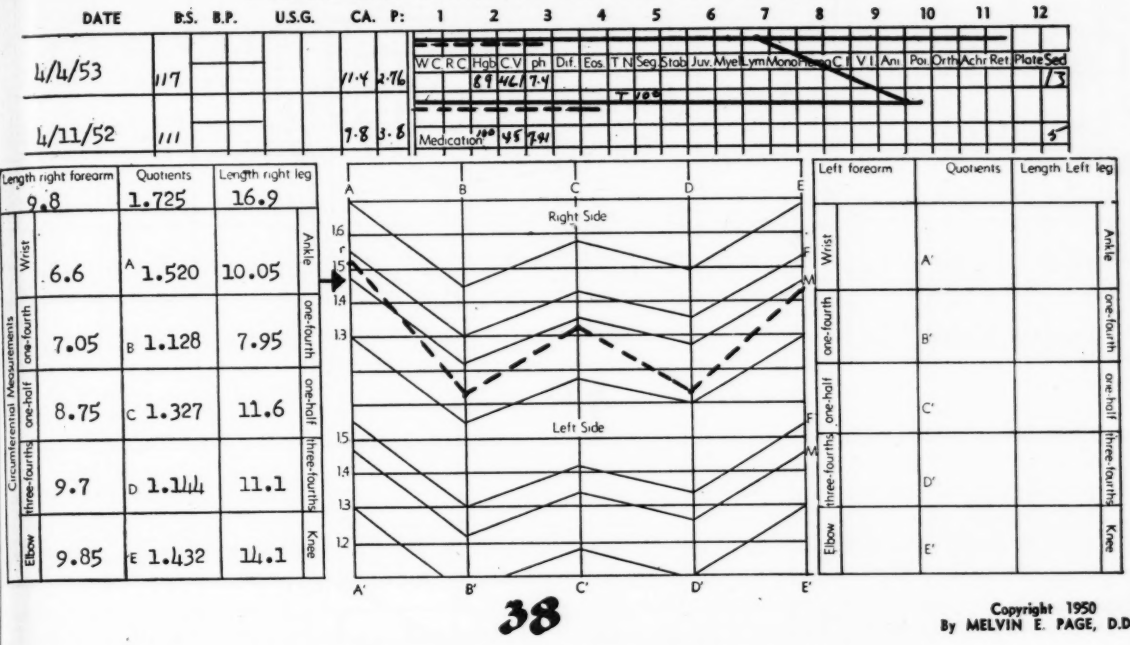
Test Before Treatment—The blood test prior to treatment shows a blood sugar of 117, calcium 11.4, phosphorus 2.76, hemoglobin 89, cell volume 46.1, blood pH 7.4, sedimentation 13.

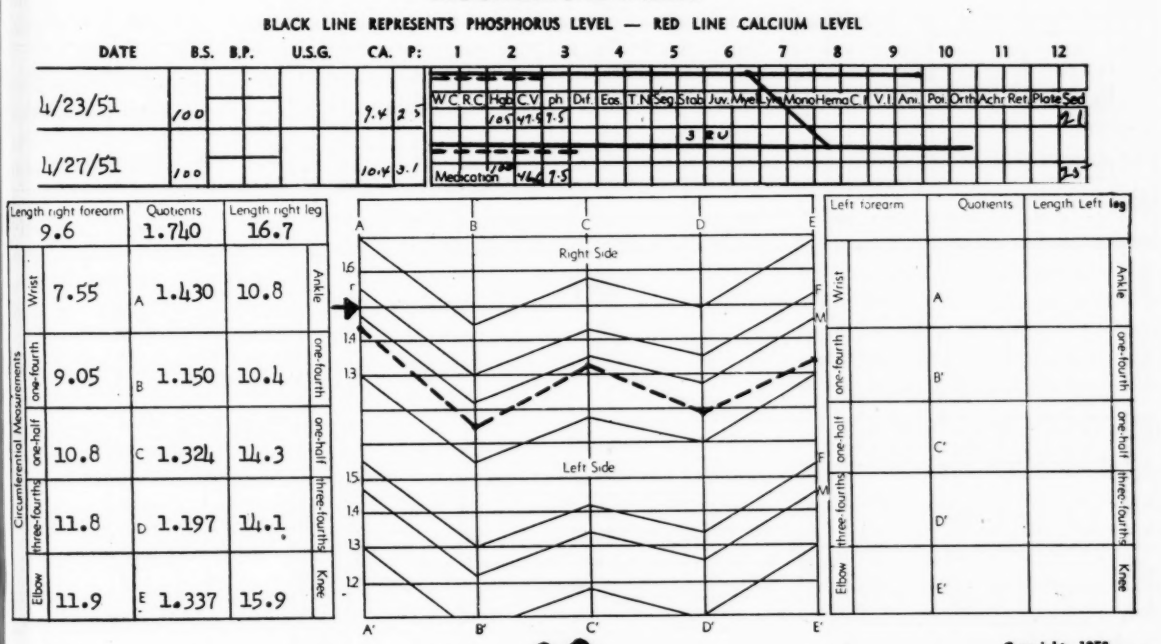
Results of Therapy— After one week on a daily tablet of 1/100 milligram of testosterone, the blood analysis showed blood sugar 111 (not yet satisfactory), calcium 9.8, phosphorus 3.8, hemoglobin 100, cell volume 45, blood pH 7.41, sedimentation 5. The amount of excess calcium had been spectacularly reduced from 4.5 milligrams to nearly 0.

Analysis of Figure 39

The chart shown in Figure 39 reads nearly normal thyroid, and posterior pituitary, but hyperanterior pituitary. The andric-gynic *arrow* is well above the graph starting point indicating andricity.

Blood Test Before Treatment—The blood analysis prior to treatment shows a blood sugar of 100, calcium 9.4, phosphorus 2.5, hemoglobin 105, cell volume 47.5, pH 7.5, sedimentation 21.





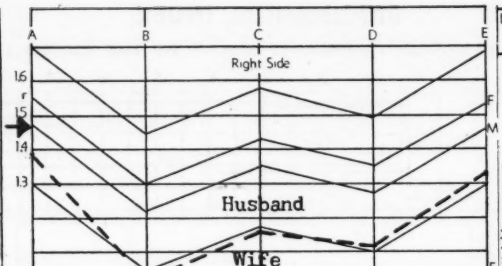
Test Results After Hormonal Therapy—The blood analysis following one tablet daily of 3 RU (3 rat units of estrogen) shows a blood sugar of 100, calcium 10.4, phosphorus 3.1, hemoglobin 100, cell volume 46.6, pH 7.5, sedimentation rate 25. The amount of excess calcium was reduced from approximately 3 milligrams to approximately 2.5 milligrams.

Natural Attraction of Opposites

In observing and studying innumerable faulty endocrine patterns it has been noted that 95 to 98 per cent of

Length right forearm	Quotients	Length right leg
10.9	1.725	18.8

Circumferential Measurements			
Wrist	7.95	A 1.397	11.1
one-fourth	9.1	B 1.035	9.4
one-half	11.3	C 1.167	13.2
three-fourths	11.85	D 1.114	13.2
Elbow	12.05	E 1.336	16.1



Length right forearm	Quotients	Length right leg
10.1	1.665	16.8

Circumferential Measurements			
Wrist	6.35	A 1.497	9.5
one-fourth	7.6	B 1.282	9.75
one-half	9.4	C 1.500	14.1
three-fourths	10.5	D 1.296	13.6
Elbow	10.5	E 1.382	14.5

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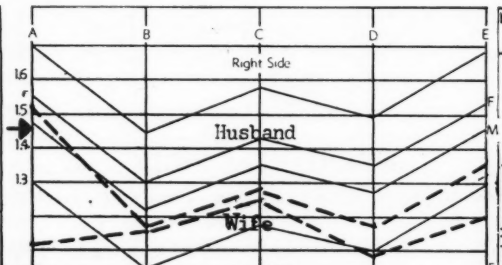
Length right forearm	Quotients	Length right leg
10	1.73	17.3

Circumferential Measurements			
Wrist	6.85	A 1.534	10.5
one-fourth	8.2	B 1.17	9.6
one-half	10.7	C 1.282	13.7
three-fourths	11.45	D 1.175	13.45
Elbow	11.3	E 1.365	15.4



Length right forearm	Quotients	Length right leg
8.8	1.738	15.3

Circumferential Measurements			
Wrist	5.95	A 1.615	9.6
one-fourth	6.3	B 1.666	10.5
one-half	7.9	C 1.75	13.85
three-fourths	9.15	D 1.584	14.5
Elbow	9.5	E 1.700	16.2

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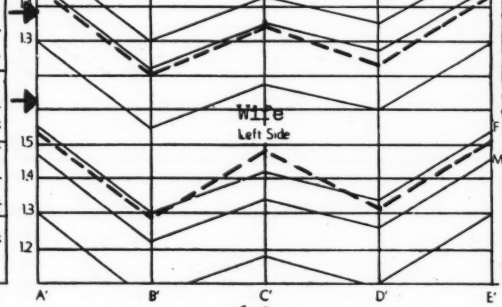
Length right forearm	Quotients	Length right leg
10.2	1.677	17.1

Circumferential Measurements			
Wrist	6.8	A 1.470	10
one-fourth	7.35	B 1.219	8.95
one-half	9.8	C 1.356	13.3
three-fourths	10.7	D 1.244	13.3
Elbow	10.7	E 1.431	15.3



Length right forearm	Quotients	Length right leg
8.9	1.806	16.1

Circumferential Measurements			
Wrist	6.2	A 1.546	9.6
one-fourth	7.25	B 1.296	9.4
one-half	8.9	C 1.483	13.2
three-fourths	10	D 1.320	13.2
Elbow	9.9	E 1.514	15

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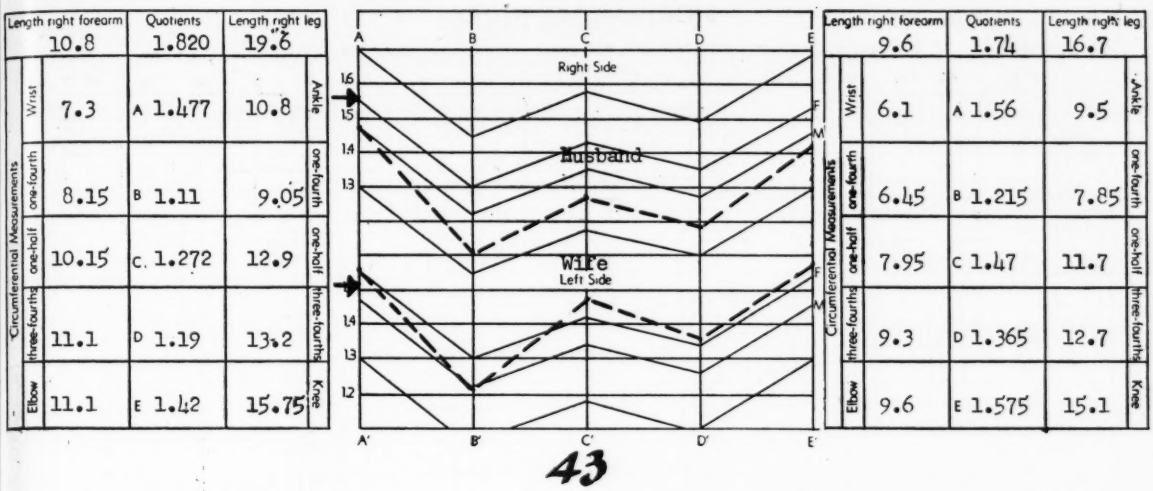

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married couples have opposite endocrine patterns. A person with a hypofunctioning thyroid usually marries a person with a hyperfunctioning thyroid (Fig. 40); a person with a hypoanterior pituitary usually marries a hyperanterior pituitary person (Fig. 41); and an andric person usually marries a gynic person. This is fortunate, for the highly keyed hyperthyroid and anterior pituitary people need stabilizers for mates and the aggressive andric types need a softening influence.

Intention of Nature—It is suspected that it is the intention of nature that opposites in endocrine dysfunction should mate in order to give the offspring a chance to be normal.

Results of Like Endocrinopathy—When the same endocrinopathy exists in both man and wife, the children, if it is possible for them to produce children, may inherit a doubly intensified endocrine dysfunction. These children appear to have *more serious* health problems at a *much earlier age* than their parents.

Analysis of Figure 41

The husband graphed in Figure 41 is not only hyperanterior pituitary, but hyper in all respects. His andric-gynic arrow shows slight gynicity; however, his wife's pattern is more gynic and extremely hypofunctioning throughout, including the anterior pituitary. That this pattern is an excellent foil for the highly geared mechanism and driving ambition of her husband is proved by their long association. They have been married only once and are now in their 70's.

Analysis of Figure 42

The husband's graph in Figure 42 is as nearly perfect as will ever be encountered. The wife's graph shows some dysfunction of the posterior pituitary, but otherwise is perfect. The wife is gynic, the husband andric. Experience indicates that hypofunction of the posterior-pituitary does not lead to incompatibility. Women with hypofunctioning posterior pituitaries, if the dysfunction is not too severe, are rounded in outline and otherwise pleasing. It is a point of interest that normal persons so frequently mate with equally normal people.

Analysis of Figure 43

Andricity in the husband and gynicity in the wife are illustrated in these graphs (Figs. 42 and 43). Both have hyperfunctioning thyroids but the wife's hypoposterior and hypoanterior pituitary are opposed by the hyperposterior and hyperanterior pituitary of the husband (Fig. 43). In their 70's, this couple has been happily married for many years.

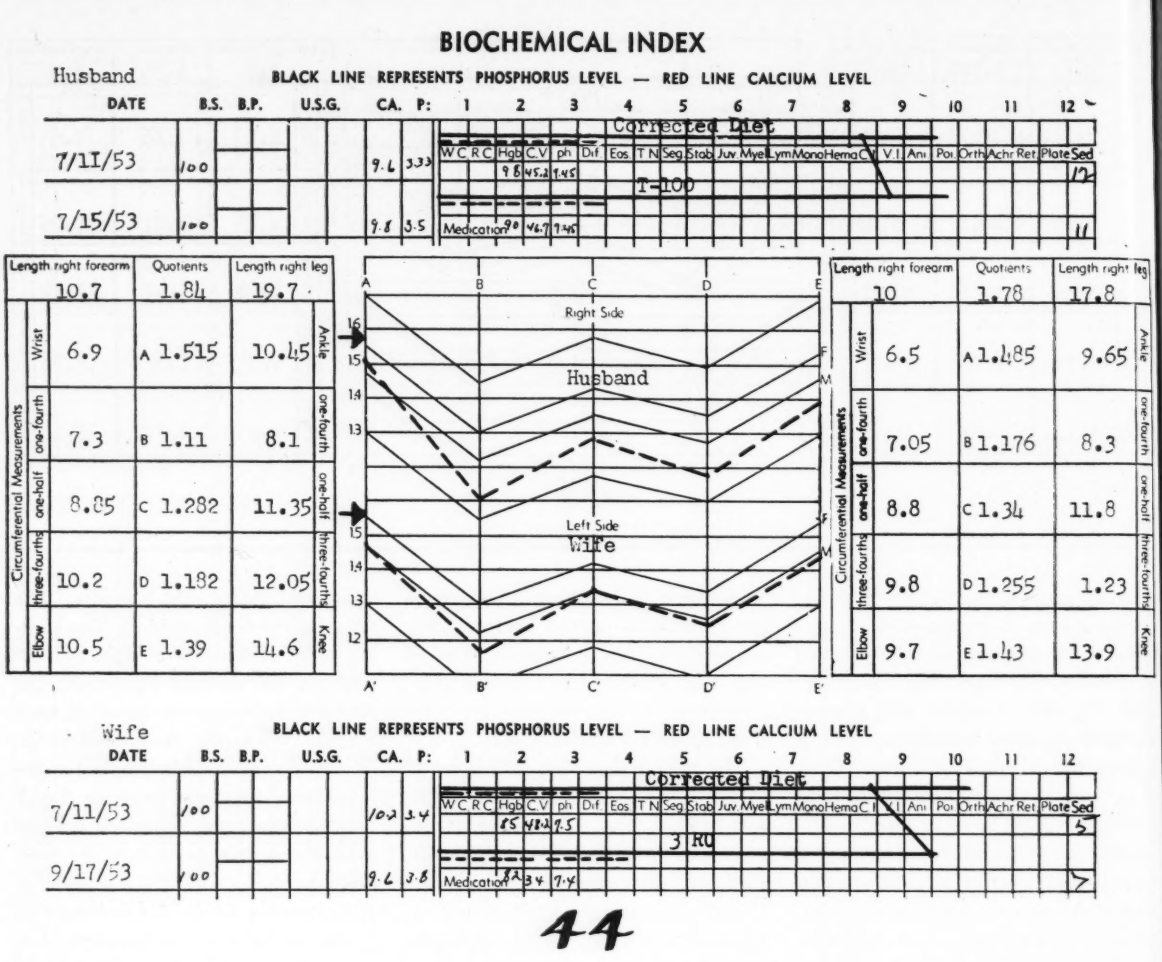
Analysis of Figure 44

The endocrine pattern and blood indexes of the couple illustrated in Figure 44 illuminate several interesting conditions and reactions. The top graph is the husband's. The starting point is extremely high, but because of the unusual leg length, the adjusted andric-gynic arrow is even higher. Ordinarily, this would be interpreted as an andric graph, but the personality suggested gynicity. Treatment decision was therefore delayed until the wife's measurements were plotted.

Personality Traits Aid in Diagnosis—The husband was soft-spoken, slow of speech, graceful in movement, demanding of attention, rambling in his thought processes, and digressive in replying to questions. These characteristics are more generally found in gynic types. The wife, on the other hand, though quiet and unaggressive, was nevertheless decisive in her movements, direct and logical in her thinking, and answered questions briefly.

Andric-gynic Determination Established—The wife's graph shows the same degree of andricity as that of the husband. Endocrine treatment, however, establishes the andric-gynic determination for this couple. Estrogen (RU) produced a more favorable calcium-phosphorus balance for the wife, testosterone for the husband.

Endocrine Divergencies in Relation to Health—The husband in this case (Fig. 44) was no less a man because of his gynicity. That is not the point. He is virile, inventive, and highly successful. The wife is womanly in every sense of the word, but not a "clinging



vine." From an endocrine point of view they are well mated. The endocrine status of these patients was being analyzed for purposes of health; fine divergencies were, therefore, of importance. These slight divergencies are considered from a pathologic aspect only and are in no way indicative of social misfits.

The Endocrine Factor in Personality—A person's endocrine pattern is an important factor in his qualities of mind, personality, and aptitude. Those born with endocrine patterns diverging from the normal are often valuable contributors to society. Their skills and abilities may be unusual and of high quality. The endocrine pattern which produces favorable factors unfortunately may also produce liabilities from the pathologic point of view.

Assets of Personality Remain Intact—Correction of body chemistry seems to eliminate the health hazards of an abnormal endocrine pattern, but does not destroy the assets of personality and ability. Increased efficiency of chemistry heightens efficiency of thought and action.

Oral Manifestations of Systemic Disease

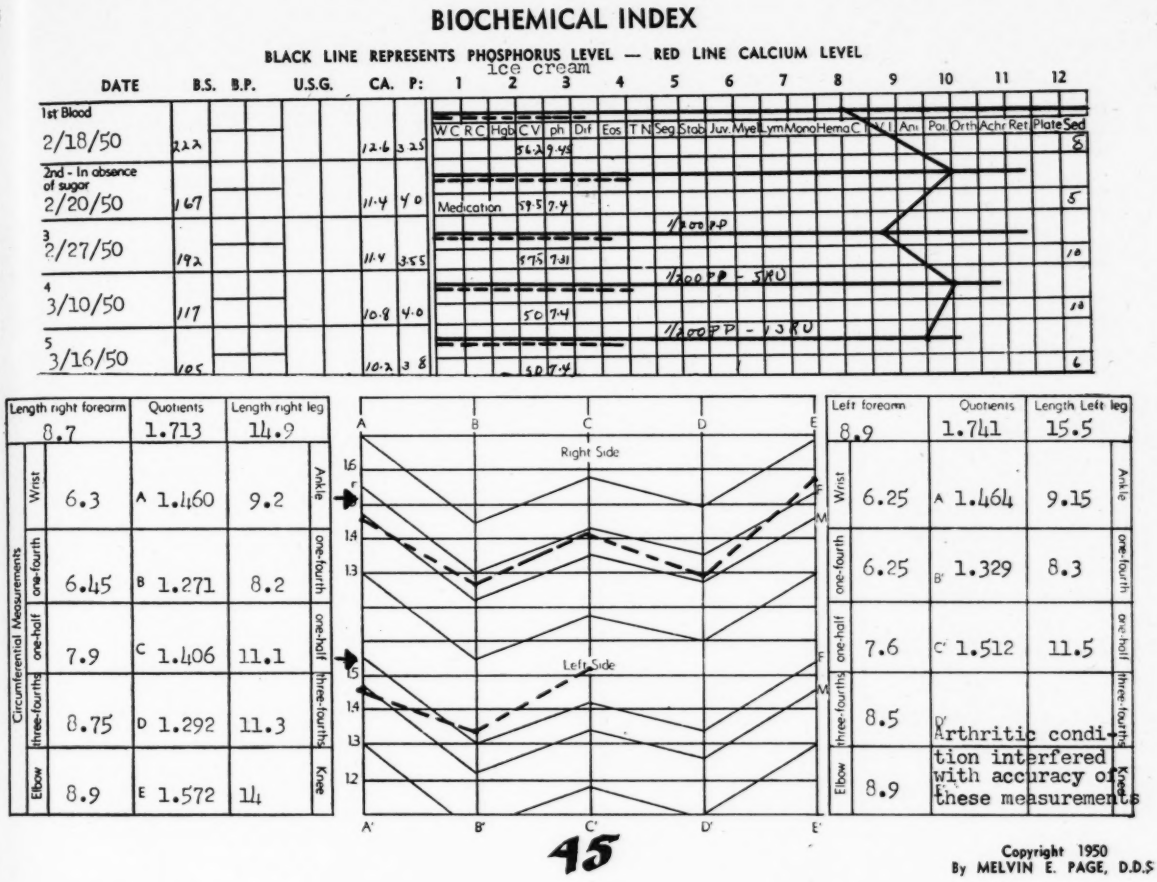
The next two cases (Figs. 45 and 46) illustrate similar blood changes resulting from opposite endocrine treatment. Each patient had a serious dental situation complicated by diabetes. As all dentists are aware, the oral manifestations of diabetes are glistening mucous membrane and tongue with either rampant caries or intractable pyorrhea.

Oral and Systemic Factors Interrelated—Effective treatment to correct the systemic factors underlying these oral symptoms of ill health further demonstrates the close interrelationship between the general physical condition and the mouth. Progress in calcium-phosphorus ratios occurred simultaneously with improvement in blood sugar levels.

Man a Total Entity—One aspect of human chemistry cannot be corrected without influencing the others; the human body cannot be divided into compartments and the effects of treatment isolated; the whole being must be considered in treatment.

Analysis of Figure 45

The results of all the blood tests in the following two cases will be shown. Figure 45 is the graph of a 67-year-old woman. The first blood test on the uncorrected diet gave a blood sugar of 222, with 5 milligrams of excess calcium, and a high cell vol-



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ume of 56.2 (female normal 43). The corrected diet alone reduced the blood sugar to 167, and excess calcium to 1.5 milligrams, but increased the cell volume to 59.5.

Therapy Applied—The graph indicated the need for posterior pituitary extract which also affects cell volume through water retention. For one week 1/200 grain daily of posterior pituitary extract was given.

Immediate Results—The blood tests showed an increase in sugar to 192, increase in excess calcium to 2.75 milligrams; but the cell volume dropped to 57.5.

Dosage Continued—Continuing the daily dosage of 1/200 grain of posterior pituitary extract, and adding 5 RU (estrogen) as the graph indicated andricity, the blood picture showed an encouraging response: blood sugar dropped to 117, excess calcium to .75 milligram, and cell volume to 50.

Results Achieved in Four-week Period—After a second week of one tablet daily of 1/200 grain of posterior pituitary extract and 13 RU (estrogen), blood sugar was 105, cell volume remained at 50, and excess calcium was still dropping though slowly. This marked change in the blood picture to provide favorable systemic conditions for oral health was achieved within a four-week period.

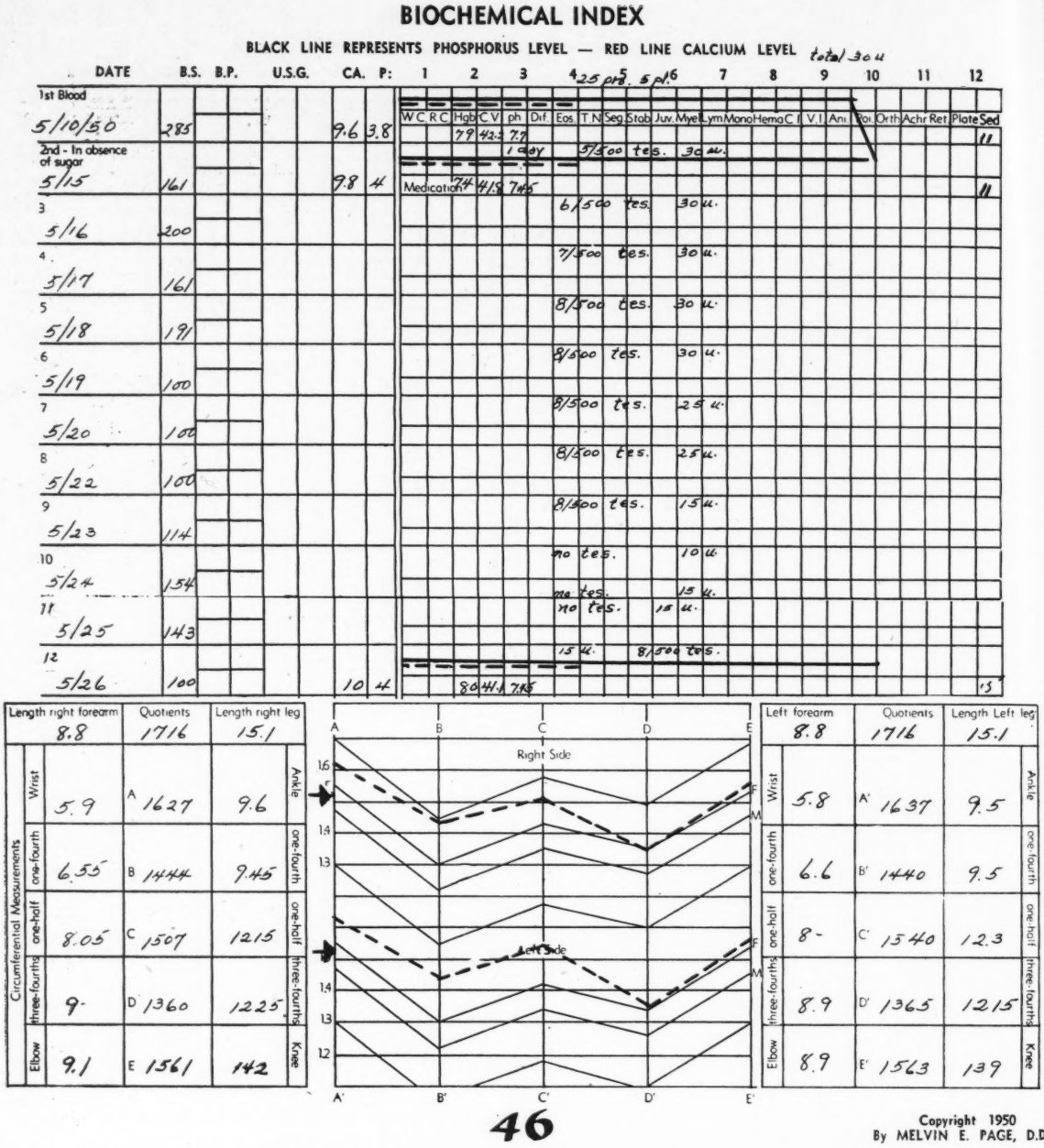
Analysis of Figure 46

Unlike the patient discussed in Figure 45 who had refused insulin treatment for her known diabetes, this patient (Fig. 46) was taking 30 units per day when first examined. Blood analysis disclosed 285 blood sugar, but a *perfect calcium-phosphorus balance.*

Surgical Results Unfavorable—This patient could not have necessary extraction of teeth; previous experience had resulted in dry socket or approximate conditions. Healing time was extremely slow and the general effect upon the patient was unfavorable.

Choice of Treatment—Since the graph and personality characteristics were markedly gynic, treatment choice was testosterone. Insulin dosage was not changed but the patient was advised to be on the alert for symptoms of low blood sugar. Daily blood sugar determinations were taken to assist in this. Daily calcium-phosphorus determinations were considered too expensive and unnecessary. Four to seven days are required before calcium-phosphorus balance shows perceptible change under endocrine treatment at this dosage level.

Initial Dose Minute—Testosterone dosage was started at 5/100 of a milligram with gradual daily increase until a perfect blood sugar of 100 was achieved. Insulin dosage was then gradually decreased to avoid an ex-



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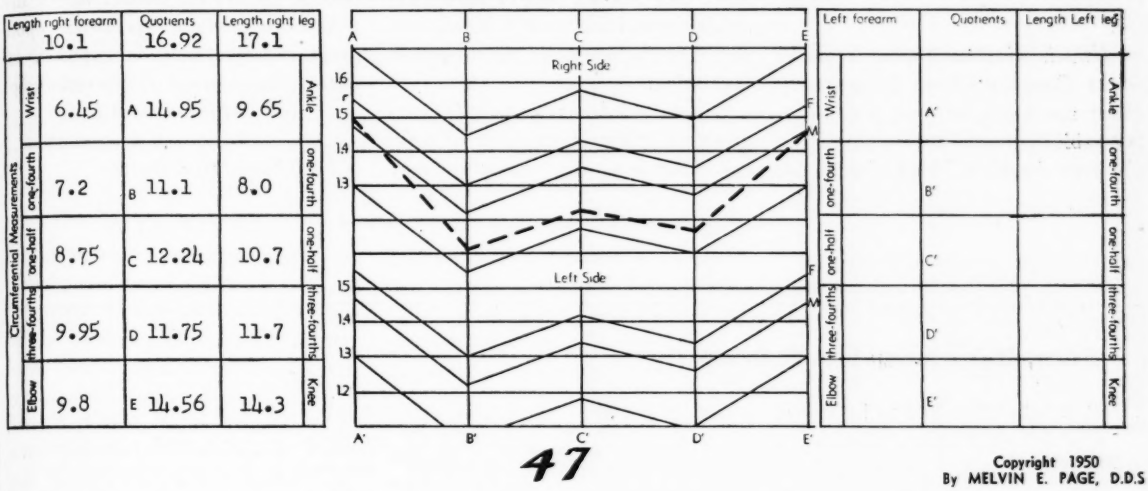
cessive blood sugar level. When the blood sugar rose on reduction of insulin the testosterone was discontinued for two days; a further increase in the blood sugar resulted but without reaching the original high level of 285. (The influence of supportive endocrine treatment lasts for several days after its discontinuance.)

Amounts of Medication Decreased—After analyzing the blood results, it was decided that 15 units of insulin was the least that could be used, and that 8/500 milligram of testosterone was the most that could be used to achieve optimum results. This combination was therefore recommended.

Perfect Balance Obtained—A complete blood determination revealed the results of the recommended dosage to be a perfect blood sugar and calcium-phosphorus balance. The patient had regained vitality and a hopeful outlook. It was believed that with the continuance of the high level of chemical efficiency dental extractions could be made with safety.

Principal Tenets of Technique Illustrated

The two cases represented by Figures 45 and 46 clarify one of the principal tenets of this approach: Any endocrine substance may affect either the calcium or phosphorus levels in either direction in *different* people.



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Treatment must therefore be based on *individual need* and *response.*

Variations in Response—(1) The body's compensating ability in the presence of long-continued deficiencies, or (2) the intricacies of interdependence in activity of the numerous glands may account for the variations in response to endocrine treatment in the dosages described.

Interdependence of Chemical Levels—The two cases represented in Figures 45 and 46 illustrate not only the interdependence of calcium-phosphorus blood levels and sugar levels, but the effect of both estrogen and androgen upon blood sugar levels.

Inhibition of Overactive Anterior Pituitary—An understanding of the use of estrogen and/or testosterone to inhibit an overactive anterior pituitary contributes an important advancement in this technique. Until this development began to unfold insulin was the only tool available to achieve this goal. More uniform and satisfactory results are obtainable under the new procedure.

Personality Factors in Diagnosis—As mentioned earlier andric-gynic determination by means of the graphs alone is still unsatisfactory. In addition to the andric-gynic arrow reading consideration must be given to personality factors. Correlation of blood results and experience provide further assistance. For example, a gynic starting point may be modified or contraindicated if a marked degree of hyperthyroidism and/or hyperpituitarism is also present with or without a low end point.

Analysis of Figure 47

This chart (Fig. 47) is that of a man with a gynic starting point but a marked hyperanterior pituitary. Blood tests following the use of testosterone were unsatisfactory; with the use of estrogen the blood picture improved. Insulin and adrenal cortex dosage remained the same, but excess calcium was reduced from 2.75 milligrams with testosterone to 1.5 milligrams with estrogen.

General Considerations in Hormonal Therapy

Blood Pressure Affected—With a high diastolic blood pressure (normal pressure being 70) estrogen is the sex hormone of choice *at the start* of treatment. Ordinarily estrogen will not increase a catabolic situation; in general, estrogen lowers the diastolic blood pressure. There are, however, cases where testosterone will lower the diastolic, but these patients must be carefully observed. Blood pressure readings should be taken with frequency and blood tests never delayed beyond a two-week interval.

Treatment in Ulcers—In the main, patients with a history of ulcers require estrogen to suppress the overactive anterior pituitary with or without insulin. Rarely does such a situation respond favorably to testosterone.

Improvement in Emotional Stability—Several male patients report that either estrogen or testosterone given to the right person in the right amount may restore sexual ability which has been temporarily lost. Either sex hormone, depending upon the individual need, appears to produce improvement in physical and emotional stability for both men and women. Balance in these factors has a direct relation to harmony within the physical being.

Factors to be Considered in Treat-

ment—Initial treatment for hyperanterior pituitary person should include consideration of (1) andric-gynic arrow, (2) personality characteristics, (3) thyroid and adrenal activity and high or low end point of the graph, (4) blood pressure, and (5) disease symptoms of inefficient body chemistry.

Methods of Determining Requirements Complicated — Temporarily either sex hormone may produce a favorable response in a hyperanterior pituitary situation. This is due to the fact that both sex hormones inhibit the anterior pituitary. Continued use of the wrong one for a particular subject will produce unsatisfactory results. The complications of determining andric-gynic requirements are as great as the value of correct usage. Were this balance not of such vital significance, innumerable blood tests would not be necessary for its proper evaluation.

Accuracy Inherent in Graph Interpretation—Other tests (that of urinary excretion, for example) may contribute to the ability to achieve the proper solution. Nevertheless, it is believed that when all aids are eventually correlated they will point to that area in the graph which will dictate the answer. For the present, the more information gained from outside factors the better. In the future more implicit dependence upon graph interpretation is expected to perfect the accuracy of this technique.

(*End of installment five*)

2810 *First Street North.*

The Biochemical Audit

THE PROBLEMS first to be considered are what causes chemical deterioration and how can such deterioration be predicted chemically and be chemically rectified. At the present time many physicians tell their patients, in effect, "to be their age, to take it easy, to slow down, and to avoid the pace that kills." In fact, they advise them how to live with their strokes, with their coronary accidents, with their emotional depressions, and with their pains and agonies, and how to grow old gracefully. It would mean a great deal if middle-life deterioration could be predicted in advance and reversed before serious symptoms occur. If the physician could avoid putting patients in beds and could allow them to work, and if further chemical deterioration could be prevented and the deterioration already present could be reversed, hospitalization could be cut down enormously and many young executives, technical men, and laborers could be kept in production for many years to come. Heart disease and strokes are not sudden causes of death. They occur as a result of years of chemical deficiency. To prevent disaster, a chemical audit, a diagnosis of chemical deficiency, and a corrective nutritional and chemical regimen are needed.

—Tom D. Spies, M.D.: JAMA **153**:185-193 (Sept. 19) 1953.

Climate and Controlled Fluoridation

DONALD J. GALAGAN, D.D.S., M.P.H., San Francisco

Summary

1. The application of a biologic index, endemic dental fluorosis, supported in part by another index, dental caries experience, in two groups of children exposed to different environmental conditions indicate that climate is an influential factor in the water consumption of infants and children.

2. The data suggest that children born and raised in areas with mean annual temperature of 70° Fahrenheit consume approximately twice as much water as children living in areas with mean annual temperature of 50° Fahrenheit.

3. It is suggested that temperature is the most important element of climatic environment and that mean annual temperature is the most practical measurement of climatic conditions available at the present time.

4. Fluoride concentration should be adjusted to climatic conditions. One to 1.2 p.p.m. of fluoride may be considered optimum in zones comparable to the Great Lakes area whereas 0.6 p.p.m. may be considered equally effective in areas similar to Southern Arizona.

From *Journal of the American Dental Association* **47**:No. 2, 170 (Aug.) 1953.

The Use of HYALURONIDASE *to Prevent Postoperative Complications*

J. C. DEVINE, D.D.S., Norfolk, Nebraska

DIGEST

Extracellular accumulation of blood and fluid (hematoma), a frequent complication of surgical or accidental trauma to the face, jaws, and oral cavity, increases the discomfort of the patient and adds to the problems of postoperative management. Various measures have been employed for palliation (local applications of cold and heat, heliotherapy, diathermy, radiation, as well as antibiotics and sulfonamides)[1] but results were more or less unsatisfactory until Benzer[2] suggested the use of hyaluronidase to disperse and thus enhance resorption of the inflammatory exudates that accumulate in the tissues of the jaws and face after injuries, dental extractions, and other conditions requiring surgery. Several case histories are presented in which this agent was successfully used.

Process of Depolymerization

Hyaluronidase, the name given by Meyer[3] to the spreading factor originally observed by Duran-Reynals[4] in 1928, acts directly on the ground substance of normal connective tissue by depolymerization of the mucopol saccharide, hyaluronic acid which forms the bulk of the intercellular substrate. Breakdown of the natural tissue barriers permits intercellular fluid to flow more freely, enabling more rapid diffusion and consequent absorption.

Rapid Spreading Under Increased Pressure—The enzyme, although lacking propulsive properties in itself, causes rapid spreading if local interstitial pressure is mechanically increased, externally by compress or bandage, or internally by the volume of the injected solution. The rate of diffusion is proportionate to the amount of the enzyme and the extent is proportionate to the volume of the fluid injected.[5, 6]

Restoration of Dermal Barrier—The dermal barrier is partly restored in twenty-four hours, and completely restored in forty-eight hours.[7]

Case Histories

In one patient in this series treatment with hyaluronidase rapidly eliminated facial swelling with relief of other serious complications after extensive dental procedures. Administered preoperatively, the enzyme prevented the same complications in two other patients subjected to severe oral surgery.

Case One

The patient was a 25-year-old male college student who had undergone removal of 27 teeth under general anesthesia, with complete alveolectomy including a lower left external oblique ridge impacted third molar. (Impaction of the third molar may often cause tinnitus, disturbance of the eustachian tube, and other symptoms not usually associated with abnormalities of the teeth.)[8]

Premedication—Preoperative physical examination was negative except for enlarged and infected tonsils. Before surgery the patient received morphine, ¼ grain; atropine, 1/150 grain; menadion, 2 cubic centimeters, and Bicillin® Injection, 600,000 units.

(Bicillin® Injection, Dibenzylethylenediamine Dipenicillin G, Wyeth, is a new insoluble salt of penicillin with prolonged action.)

Postoperative Treatment — After surgery Bicillin® Injection, 600,000 units, was administered every twenty-four hours for four days. Hot moist packs were applied to both sides of the face for forty-eight hours and sedatives were given to relieve the pain.

Initial Postoperative Measures Inadequate — Despite the measures taken, soft swelling appeared in the left cheek and within the mouth in six hours, and progressively increased. At the end of the second day it was apparent that the palliative measures applied were inadequate, for the patient's condition degenerated steadily.

Symptoms Noted—(1) The left eye was completely closed with severe

[1]Devine, J. C.: The Use of Allantoin and Sulfanilamide Ointment in Extraction Sockets and Oral Surgery, DENTAL DIGEST **50**:267-270, (June) 1944.

[2]Benzer, P.: Preliminary Report on Use of Hyaluronidase in Treatment of Traumatic Swellings, Oral Surg. **4**:1515, (Dec.) 1951. Benzer, P., and Schaffer, A. B.: Use of Hyaluronidase in Treatment of Traumatic Swellings, ibid. **5**:1315-41, (Dec.) 1952.

[3]Meyer, K., et al.: Relationship Between "Spreading Factor" and Hyaluronidase, Proc. Soc. Exper. Biol. & Med. **44**:294-96, (May) 1940.

[4]Duran-Reynals, F.: Exaltation de l'activite du virus vaccinal par les extraits des certains organes, Compt. rend. Soc. de biol. **99**:6-7, (June) 1928; Tissue permeability and spreading factors in infections, Bact. Rev. **6**:197-252, (Dec.) 1942.

[5]Hechter, O.: Mechanical Factors in Hyaluronidase Action in Skin. J. Exper. Med. **85** 77-97, (Jan. 1) 1947. Hechter, O., et al.: Clinical Use of Hyaluronidase in Hypodermoclysis. J. Pediat. **30**:645-56, (June) 1947.

[6]Britton, R. C., and Hab f. D. V.: Clinical Uses of Hyaluronidase, a Current Review, Surgery **33** 917 (June) 1953.

[7]Hechter, O.: Reconstruction of the Dermal Barrier in Fluid Diffusion. Proc. Soc. Exper. Biol. & Med. **67**:343-44. (March) 1948.

[8]Devine, J. C.: Temporomandibular Joint Changes, Dental Survey **19**:1165-67, (Aug.) 1943.

ecchymosis of the lids and cheek; (2) the lower lip was markedly swollen with pronounced swelling within the mouth; (3) the jaws were rigidly closed so that the patient could form only a few syllables and then only with great difficulty; deglutition was impossible, no liquid nourishment had been taken for eight hours and no solid food for twelve hours. The patient was in extreme discomfort and deeply depressed.

Additional Medication Applied—Hyaluronidase, 300 TR units, dissolved in 3 cubic centimeters of sterile isotonic sodium chloride U.S.P., was injected into the masseter muscle, using a 22-gauge 1½-inch needle and 5Y B-D Yale syringe. Because the patient was now edentulous it was possible to introduce the needle into the mouth despite the complete trismus for injection of the hyaluronidase solution.

Description of Agent Used—Wydase®, Lyophilized Hyaluronidase, Wyeth, A TR unit is defined as the amount of hyaluronidase which will reduce the turbidity produced by 0.2 milligram of potassium hyaluronate in acidified horse serum to that produced by 0.1 milligram under assay conditions.

Extraoral Pressure Provided—A compress in the form of a small folded hand towel was applied to the left cheek and held in place by a bandage.

Immediate Results—Eight minutes after injection of the hyaluronidase solution (1) the closed left eye opened half way, (2) the swelling of cheek and mouth was markedly reduced, (3) about 50 per cent of the discoloration had disappeared, and (4) deglutition was normal.

Twenty-two minutes after the injection when the bandage was removed (1) the left eye opened easily, (2) the spasm of the jaws had completely abated, and (3) all discoloration had disappeared. Some swelling was still present, however.

Complete Relief Obtained: Pressure was again applied with the folded towel and bandage and for one hour. The patient then expressed complete relief, was relaxed and at ease, and enjoyed a full meal (soft diet) in comfort.

Supplementary Treatment—(1) A Bepron® Capsule (Bepron®, Beef Liver with Iron, in Capsules, Wyeth), (2) a 150-milligram ascorbic acid tablet three times a day after meals, and (3) 8 ounces of fruit juice were given every two hours.

Precaution Against Local Infection—The patient was instructed to place a Sul-Pondet® (Penicillin-Bacitracin-Sulfadiazine Troches with Benzocaine, Wyeth) in the mouth, to be dissolved slowly in the saliva, the saliva to be retained as long as possible without swallowing. This was repeated every three hours for forty-eight hours.

Patient Discharged—Much improved, the patient was discharged from the hospital at the end of the third day. Slight swelling was still present in the left cheek. On the morning of the fourth day temperature, pulse, and respiration were normal. On the sixth postoperative day the patient returned to classes.

Case Two

The patient in this case was a 30-year-old male with all teeth present except the upper right third molar, upper left third molar, and lower left third molar. Occlusion was normal.

Surgery—Under local anesthesia removal of impacted lower right third molar and lower right second molar was completed.

Root Absorption Present—As a result of the horizontal type impaction the crown of the lower right third molar was in contact with the distal root of the lower right second molar causing some absorption of the root of the lower right second molar.

Medication Applied—The anesthetic (procaine) was injected into the mandibular foramen, followed by 150 TR units of hyaluronidase. Bicillin® Injection, 600,000 units, was administered in the gluteus medius.

Conditions — Postoperative pain and swelling were slight and there was no trismus.

Case Three

The patient was a 54-year-old male with all teeth present except the lower right second molar.

Surgery—Removal, under local anesthesia, of impacted lower right third molar was completed. The tooth was in horizontal bone impaction with part of the crown exposed.

Therapy—As in Case Two, procaine was injected into the mandibular foramen, followed by administration of 150 TRU hyaluronidase. Bicillin® Injection, 600,000 units, was administered in the gluteus medius.

Results Satisfactory—After removal of the impacted tooth there was no postoperative pain, swelling, or trismus.

Summary

In one patient who suffered serious postoperative complications, including complete trismus, facial swelling, and hematoma with closure of one eye after extensive oral surgery, symptoms were rapidly relieved by injection of hyaluronidase.

In two additional patients, subjected to dental surgery ordinarily attended by severe after-effects, preoperative injection of hyaluronidase prevented the pain, swelling, and disability that usually follow such procedures.

The anesthetic (procaine) when used with hyaluronidase was faster acting, more pronounced in effect, and of longer duration. No change has ever been noted by the author in temperature, pulse, or respiration following the injection of hyaluronidase.

0435 *Norfolk Avenue.*

The EDITOR'S Page

THREE PAPERS published in the *Proceedings of the Royal Society of Medicine* describe a common clinical condition that does not receive enough attention in discussions on operative dentistry. The condition involves the palatal or lingual cingulum pit in maxillary incisors, usually the laterals. This pit is also called the foramen caecum or an invagination of the lingual tooth surface. Every clinician has observed pulp necrosis in maxillary lateral incisors of young children that may be explained on the basis of this developmental defect.

The first author (Hallett) gives this clinical description: "Some of these teeth give depressed vitality reactions — though soon after eruption the point of a fine probe applied to the pit in the cingulum of the tooth may cause acute pain as if an exposure of the pulp were present. Occasionally it has been noticed that a patient presents with an apparently normal incisor — usually a second maxillary — which, without any history of trauma or carious cavitation, has become abscessed, or failed to complete root development, or both. The matter becomes of great clinical importance if it can be shown that these developmental defects are present in a significant proportion of all cases, for the second maxillary incisor is a most important member of the dentition esthetically and replacement by artificial means in the young person is a formidable problem."

The second author (Stephens) describes the treatment of these invaginations: "An obvious prophylactic treatment to lessen the chances of pulpal necrosis is to close the orifice to the invagination as soon as it has passed the gingival margin during the course of eruption of the tooth. This may most easily be effected by preparing an undercut cavity in the cingulum pit to the thickness of palatal enamel only. This may be filled with amalgam pressed on to soft oxyphosphate cement. Passage of the bur into the cavity of the invagintion is to be avoided as the risk of pulp exposure is very great.

"Another point of clinical significance is that if a patient presents for treatment of a chronic apical abscess or dental cyst associated with an upper lateral incisor and that tooth is seen to have an invagination, a radiograph should be taken of the other lateral incisor to exclude the possibility of a similar periapical condition."

The third author (Kramer) describes the pathology of pulp death in cases of invagination: "(1) In permanent maxillary lateral incisors showing minor palatal invaginations, pulp death often occurs in the absence of clinical or histologic evidence of caries.

"(2) It has been shown that death of the pulp is preceded by the formation of a pulp abscess in the region of the invagination.

"(3) Although the palatal cornu of the pulp passing behind the invagination may come close to the dentine surface, no direct communication between this cornu and the interior of the invagination was demonstrated.

"(4) In only one specimen was it possible to demonstrate a pathway through the dentine from the base of the invagination towards the pulp.

"(5) It was constantly found that a minute area of the dentine at the base of the invagination was not protected by enamel.

"It is suggested that, following eruption of the tooth and infection of the interior of the invagination, microorganisms gain access to the dentine in an area unprotected by enamel. Following such bacterial infection, a pulp abscess develops opposite the area of infected dentine and ultimately leads to death of the pulp."

In examining the mouths of children, in addition to the routine bitewing x-ray studies, it is necessary to do a careful clinical examination with good light, using sharp explorers, working in a dry field. Particular attention should be given to the lingual surface of the maxillary lateral incisors. Developmental defects in pits and fissures in *all teeth* should be opened and sealed with the restorative material of choice. The practice of prophylactic odontotomy needs re-emphasis and more emphatic attention in clinical practice.

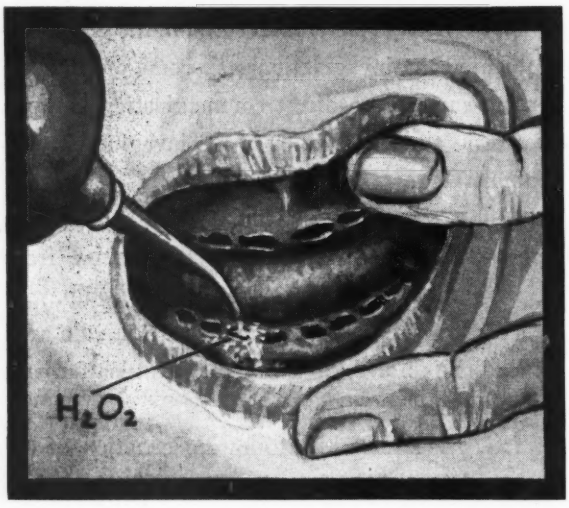
1

Clinical and Laborato

Storing Alginate Impressions

Glenn I. Allen, D.D.S., Alton, Illinois

1. To store alginate impressions for a short time they may be placed in a covered glass jar in which a dampened cellulose sponge has been placed to ensure sufficient moisture. The jar also may be used to store recently poured models and finished acrylic dentures.

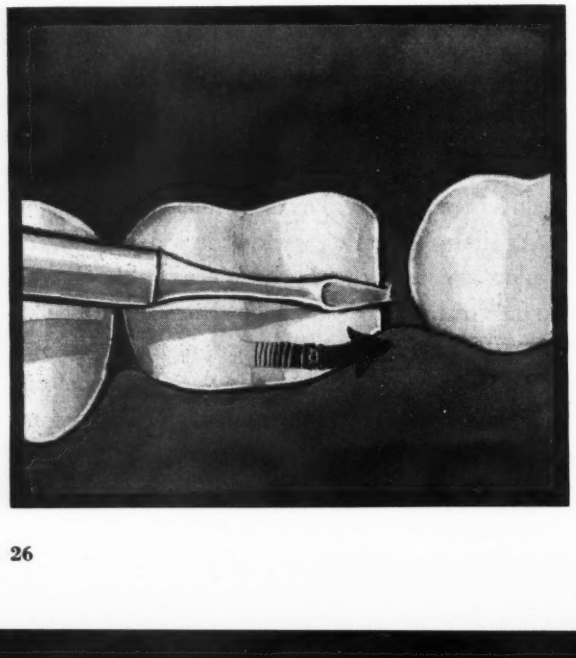


2

Postoperative Care for Immediate Denture Cases

Keith S. Campbell, D.D.S., Tasmania, Australia

2. Twenty-four hours after the extraction of the teeth and the placement of the immediate dentures, the extraction wounds should be irrigated with warm full-strength hydrogen peroxide to remove blood clots and debris.



3

A Simplified Operative Technique

E. McDermott, D.D.S., Portage La Prairie, Manitoba

3. After a Class 2 cavity has been opened the buccal and lingual extensions of the preparation should be made with enamel hatchets or other cutting instruments using a buccal or lingual approach. Less cutting pressure is needed than that required in an occlusal approach.

READERS *are Urged to Collect* $10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay $10.00 on publication.

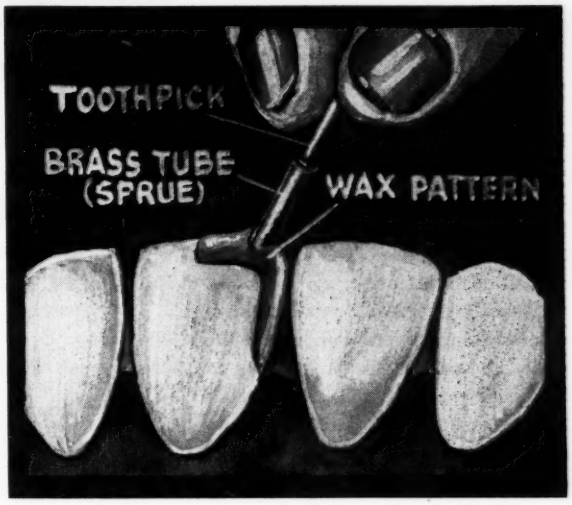
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Sprueing Wax Patterns

Donald B. Bresee, D.D.S., Longmont, Colorado

4. Brass tubing sprues are easily held for flaming by engaging one end of a toothpick. The toothpick carries the sprue to position and facilitates holding until the wax has set. After the pattern has been removed, the sprue is held lightly between the fingers and the toothpick is disengaged.

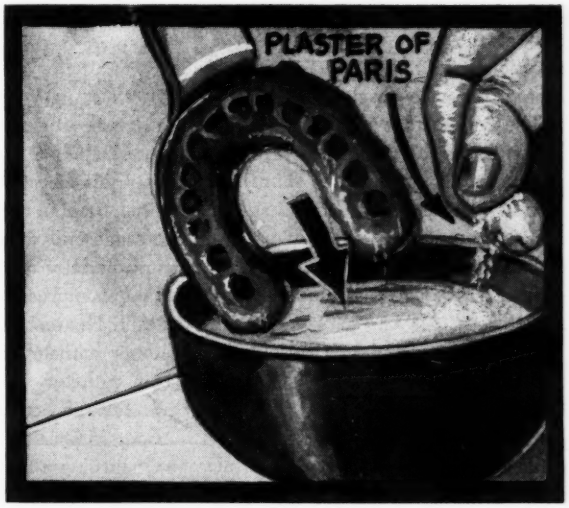


4

Removing Mucus from Impressions

Charles B. Branson, D.D.S., Lincoln, Nebraska

5. Rinse the alginate or hydrocolloid impression in a bowl of cold water into which a small amount of plaster of paris has been added. This procedure will make the impression free from mucus.

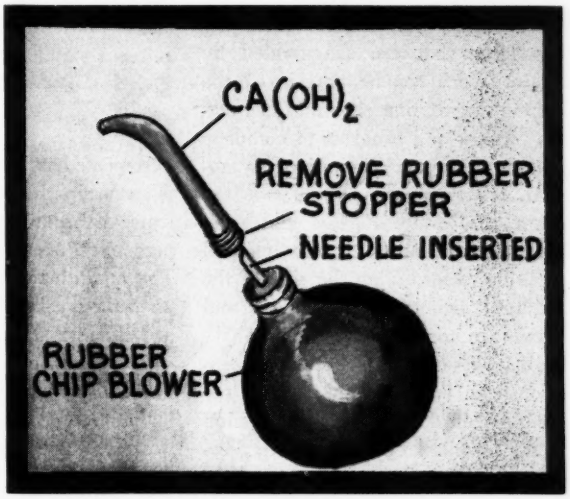


5

Calcium Hydroxide Applicator

Peter J. Coates, B.D.Sc., Rochester, New York

6. To apply calcium hydroxide in pulp therapy, the powder is placed in an empty sterile cartridge of a sulfonamide insufflator. The powder is blown to place using a rubber chip blower.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 38 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

Subdural Hematomas

A subdural collection of blood and fluid frequently follows a seemingly insignificant trauma. To make the diagnosis and determine the time for treatment it is necessary to question the patient closely and to make a careful examination.

After the age of 40, subdural hematomas are more frequent. This is the period when the veins forming a bridge between the cortex and sagittal sinus are more susceptible to slight injury. If a sufficient amount of venous blood escapes into the subdural space, the accumulation is not absorbed and within a short time a membrane forms around the clot. The clot liquefies and the high total protein of the fluid in the sac attracts additional fluid. Symptoms of intracranial pressure develop.

The course of chronic hematomas is insidious, the time from injury to operation being usually about two months but sometimes lasting as long as two years. A majority of patients do not remember having sustained an injury, or they regard the trauma as trivial.

On hospital admission nearly half the patients are believed to have brain tumors. About 75 per cent have objective abnormal neurologic signs while only subjective complaints are present in 10 per cent. The progressive increase in the number of symptoms and in the severity is the most important diagnostic point.

The initial symptoms are usually headaches that are exaggerated by strain. Weakness or paresis of the extremities of one side of the body may follow and progress to complete unilateral paresis. Spacticity may appear, nearly always on the side opposite the lesion. Paresis and spasticity are the most accurate clinical signs for determining the side of the subdural hematoma. Dizziness and ataxia are common.

Disturbances of the state of consciousness are frequent. Many patients are in deep coma on admission to the hospital. Convulsions may occur preoperatively.

MEDICINE *and the Biologic Sciences*

Roentgenograms rarely demonstrate a skull fracture, but arteriography is of considerable aid in diagnosis. In 10 per cent, diagnosis can be made only by exploration through multiple burr openings or a subtemporal decompression. All clots of blood should be washed out by inserting a rubber catheter into the cyst cavity. The catheter is left in place for twenty-four to forty-eight hours. About 75 per cent of the patients have no neurologic residual symptoms.

Poppen, James L., and Strain, Richard E.: Chronic Subdural Hematomas, Surg. Clin. North America **32**:791-799 (*June*) 1952.

Skin Damage by Sunlight

Repeated overexposure to sunlight is an occupational hazard for persons exposed to the sun a great deal. Naval personnel are particularly affected. The condition, sometimes mentioned as "sailors' skin," is also referred to as heliodermatitis.

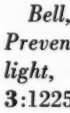
The condition is seen chiefly in the habitually uncovered areas of the body. A peculiar mottled bluish whiteness appears (1) on the lower lids, (2) cheeks, (3) lips, (4) backs of the hands, or (5) in other areas. This background is etched by tiny dilated blood vessels.

As exposure continues, the telangiectases multiply. The skin becomes thin, lax, and without luster except on the back of the neck where it is markedly thickened. Here the wrinkles deepen into furrows. Eventually small scaling patches appear. These in time become indurated papules which are senile keratoses. They have the potentiality of becoming prickle-cell epitheliomas. A basal-cell epithelioma may be present as a papule or a nodule with a raised border and usually with a crusted or ulcerated center.

Persons prone to sunburn, especially those who blister, are most readily affected. Among these, the most sensitive are the red-headed, freckled types.

Work is being done with para-aminobenzoic acid. This compound totally absorbs most of the ultraviolet light responsible for the damage. The acid is not easily adapted to common ointment bases because of its insolubility. However, the sodium salt is readily soluble in alcohol and water. This permits its incorporation with standard pharmaceutic preparations.

Bell, C. D., and Mazzone, W. F.: Prevention of Skin Damage by Sunlight, U.S. Armed Forces M. J. **3**:1225-1233 (*August*) 1952.



Disc Operation—Indications

Physical or laboratory findings should not be the sole factors in determining whether or not to operate on a disc lesion in the lumbosacral spine. The persistence and severity of the pain and disability, and the patient's reaction to the symptoms should also be considered. Time is the most important factor in the cure of disc lesions without operation.

Many surgeons advise operation only when the pain (1) has persisted for at least four weeks despite sound conservative therapy, (2) is of extreme severity, or (3) is recurrent.

With or without traction, bed rest protects the affected disc from pres-

sure caused by weight-bearing or motion. Some form of support (a corset, belt or brace) is provided for the low back. Excessive lifting, bending, and similar activities are avoided. Eventually the symptoms subside and the disability lessens, probably because of inspissation or shrinkage of the disc material which relieves the pressure that causes the pain.

In some cases, the persistence and severity of the symptoms, or tendency to recur on slight provocation makes surgical removal of the disc advisable. Many patients cannot afford to be incapacitated for the length of time required by bed rest. Others insist on operative therapy for the immediate relief from pain.

Surgical excision of the disc is relatively safe with short convalescence. However, results are not always beneficial. In competent hands, operative therapy cures 50 cent of patients, substantially relieves 40 per cent, and gives little relief or possibly increases pain for 10 per cent. The patient should be advised to weigh operative risks against the long period of incapacity required by bed rest.

From the physician's point of view, surgery is indicated under the following conditions: (1) when severe and disabling symptoms persist after several weeks or months of conservative treatment, (2) if the patient is disabled and needs to work for a living, and (3) for patients confined to bed by severe pain not relieved by bed rest with traction or by manipulation without a general anesthetic.

Results are better if the operation is performed while the symptoms are acute, especially if a ruptured and extruded disc is removed relatively soon after onset of symptoms.

Key, J. Albert: *Indications for Disc Operation*, *Ann. Surg.* **135**:886-891 (*June*) 1952

Brucellosis—General Considerations

In many patients remarkably little can be found physically wrong even when Brucella are circulating in the blood stream. Usually, however, there is fever. An elevation of temperature is noted in most active cases if the temperature is taken every four to six hours during the day. Some patients complain of (1) sweats, (2) chills, (3) general aching, (4) insomnia, (5) nervousness, and (6) mental depression. In some the disease hits the central nervous system so hard that symptoms persist for years.

Enlargement of lymph nodes is the outstanding feature of the physical findings. A biopsy of one of these nodes will usually show viable Brucella. The spleen can be felt in only about one-third of the cases. In about 10 per cent of cases there is involvement of the spine, particularly of the lumbar region. The lesions often look like those of tuberculosis. Brucellosis can produce a chronic meningitis lasting for years.

It has been shown that in 75 per cent of cases, infection comes from direct contact with infected animals. In most of the other 25 per cent the infection comes from drinking raw milk. To a large extent brucellosis is an occupational disease of workers in the following fields: (1) farmers, (2) cattle raisers, (3) meat packers, (4) veterinarians, and (5) laboratory technicians.

The disease is often difficult to detect. The skin test is unreliable, inasmuch as 20 per cent of apparently normal persons react positively. The only sure proof is a positive culture obtained from the blood or the bone marrow. The leukocyte count rarely goes over 10,000. Occasionally there is leukopenia with a relative lymphocytosis. The red blood sedimentation has no diagnostic value in the disease, even when there is suppuration somewhere.

Fortunately the disease is self-limited. About 80 per cent of persons recover no matter what is done or not for them. With antibiotics the recovery can be quickened and the complications made less severe. Aureomycin and terramycin are definitely effective. In from 75 to 80 per cent of cases the patient recovers within a year. The remaining 20 per cent complain of ill health after that. Some have fever and other evidence that the organisms are still living in the body. The symptoms come and go in others while some cases are characterized by the following conditions: (1) no fever, (2) no physical findings, (3) low agglutination titers, and (4) negative cultures. In these cases there would seem to be some nervous residue of the disease.

The main problem is to eliminate brucellosis in the country's herds. In some areas 30 per cent of the herds have been found infected. The meat-raising and dairy states are making efforts to banish this chronic disease in animals.

Editorial: Brucellosis, Mod. Med. **20**:71-73 (November 15) 1952.

Antibiotics vs. Fungus Infection

Some clinicians believe that real or supposed fungus infection that appears during the treatment of a different disease may be due to aureomycin, terramycin, and other wide-spectrum antibiotics. Actually there is little convincing evidence that antibiotics directly stimulate fungal growth.

Candida albicans does multiply when more sensitive organisms are reduced. Usually, however, distressing symptoms such as sore throat, diarrhea, and vulvar pruritus are reactions to primary irritations of mucous membranes by the potent agents employed. These symptoms should not be attributed to moniliasis.

Infection with fungi during medication is a complex process. It is only one phase of a broader and more serious problem. Resistance to antibiotics is developing in organisms of many types including bacteria. More and more strains with great potential virulence, including hemolytic streptococci and coagulase-postive staphylococci, are losing their susceptibility to drugs.

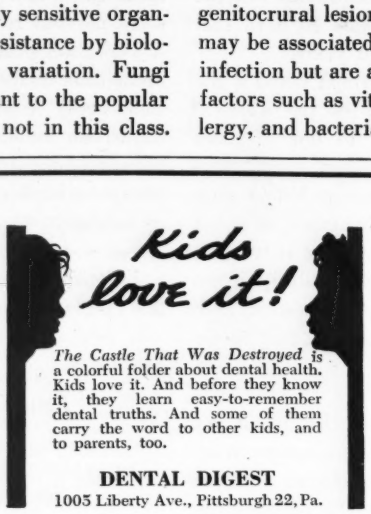
In some cases, especially if the patient's strength is worn down by long illness, harmless floras that are intrinsically resistant to antibiotics become more or less pathogenic, usually without serious effect.

Antibiotics do not sterilize the regions normally inhabited by microorganisms. After a variable period, a new flora is established in various ways: (1) The bacteria or fungi initially present in small numbers are no longer suppressed by more dominant forms. (2) Some resistant types are acquired by contact with an outside source. (3) Formerly sensitive organisms may acquire resistance by biologic adaptation and variation. Fungi are naturally resistant to the popular antibiotics and are not in this class.

Most persons receiving oral antibiotics have large quantities of Candida albicans in the mouth and feces, especially when troches are dissolved before swallowing. Few have moniliasis.

The newer drugs produce a number of reactions including the following: (1) sore mouth and throat, (2) black hairy tongue, (3) diarrhea, and (4) genitocrural lesions. Similar ailments may be associated with actual fungus infection but are also caused by other factors such as vitamin deficiency, allergy, and bacterial or viral invasion.

Kligman, Albert M.: Do Antibiotics Cause Fungus Infection? JAMA **149**: 979-983 (April 17) 1952.



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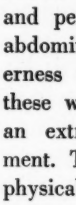


Pelvic Congestion of Psychosomatic Origin

It has been noted that quite a number of women experience a frequent and perplexing syndrome of lower abdominal pain and parametrial tenderness without apparent cause. In these women, emotional disorder is an extremely common accompaniment. The condition is probably a physical reaction to stressful life situations.

The pelvic congestion usually causes pain in the suprapubic region or in either or both lower quadrants or the sacral area. The sensation is typically a dull, heavy ache, sometimes with a burning component, usually aggravated premenstrually or by coitus.

The physical signs may include any or all of the following: (1) tenderness of the parametrium, (2) cystic enlargement of one or both ovaries, (3) diffuse enlargement of the uterine fundus, and (4) congestion, hypertrophy, and hypersecretion of the cervix. Somatic pains are not limited to the reproductive area.

In women with pelvic congestion, the childhood background reveals a lack of maternal warmth and care and of the associated affection and security. A possible sequel of the want of good relationship with the mother is apparent in the subsequent performance of attitudes of the patient in childbearing and child rearing. These are functions partly dependent on ability to identify with a suitable mother figure.

Emotional immaturity and strong dependent needs are common to all women with pelvic congestion. Frequent periods of depression and thoughts of suicide may occur.

Marital adjustment is not always satisfactory. Most of the woman marry to escape an intolerable home situation. Despite the high incidence of expressed dissatisfaction with mar-

riage, few are divorced or separated from their husbands. This apparent contradiction is explained by the patient being unable to tolerate the insecurity and dependence of separation.

Sexual behavior and attitudes reveal a meagerness of sexual drive and expression, probably indicative of strong repressive forces. Frigidity is common among patients with the pelvic congestion syndrome and often begins at the time of pregnancy.

The reproductive records of these women are not unusual except for an abortion rate that is high. However, an examination of the attitudes and reactions to the pregnancies is more revealing. A reasonable acceptance of the first pregnancy is usually achieved. Subsequent pregnancies, however, are not accepted and a negative attitude to further children predominates.

Duncan, Charles H., and Taylor, Howard C.: A Psychosomatic Study of Pelvic Congestion, Am. J. Obstet. & Gynec. **64**:1-12 (July) 1952.

Cyclical Buccal Ulceration

Problem

For seven days before the onset of each menstrual period a woman of 21 suffers from large ulcers of the gums and buccal mucous membranes. These heal completely at the onset of the period. Bacteriologic examination of the ulcers has proved negative and pelvic examination has at all times been normal. She has been treated with local applications to the ulcers and with estrogens, but without success. What treatment is advised?

Discussion

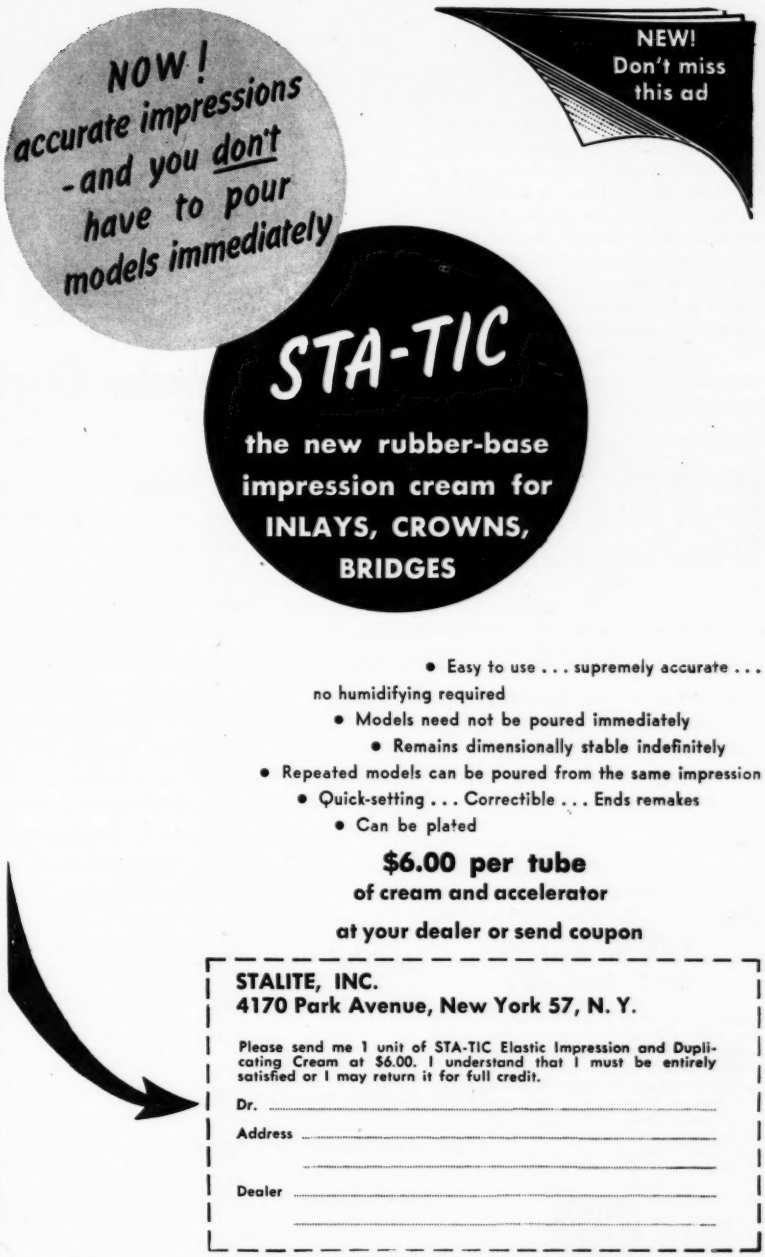
Cyclical buccal ulceration occurring in relation to menstruation is a well-recognized condition and there is often, but not always, coincident ulceration of the vulva, lower vagina, or anus.

Cause Unknown—Treatment is empirical and unsatisfactory as the cause of the condition is unknown. Some relationship to hormonal levels is suggested by the association of ulceration with menstruation and by its almost invariable disappearance during pregnancy. An allergic basis is suggested by the fact that the lesions resemble herpes and because there is often a familial history of other allergic conditions.

Treatment Possibilities—Before deciding about treatment, general diseases, especially deficiency states, including anemia, should be excluded; also oral sepsis. It may also be worth while arranging for skin sensitivity tests. Unless these investigations give a lead, treatment has to be empirical.

Specific Agents — Antihistamine preparations of one sort or another should be tried first, and if these fail, progesterone or chorionic gonadotropin. Large doses of vitamin C and sodium hyposulphite, 10 grains, three times a day appear to help in some cases.

From *British Medical Journal*, No. **4836**:634 (Sept.) 1953.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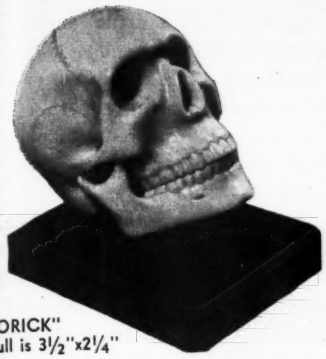

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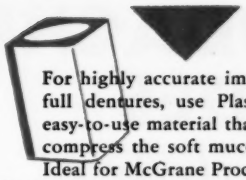
Degeneration Comes Too Soon

In the community where I live three friends have recently died at the 50-year mark. All three were substantial citizens who left sizable estates and sizable families. Two died of malignant disease and one of disease of the coronary vessels. There is nothing unusual in this story. It is being sadly reenacted every day in every community of the nation: men at their most valuable time of life being cut down by the degenerative diseases.

A writer in *Medical Clinics of North America* says directly and dramatically: "It seems clear that some factor which is peculiarly lethal for the male is operating selectively in our population." What is that factor? It is probably no single one but several. One proposal is that it is fat in the American diet. Men who are overworked and under tension drink to relieve their exhaustion, then eat too much to satisfy their unnatural appetites. Successful men are the ones who can afford the rich and exotic foods. Men of affairs are also required to travel too much, to entertain by wining and dining, to lose sleep and neglect fresh air and simple exercise. Following almost every large dental meeting one or more of our colleagues is stricken with coronary disease. Every large dental meeting means too many drinks, too many cigarettes, too many "banquets," too little sleep, too much bad air, too little exercise. When one recalls that there are more than 2000 conventions of national organizations held every year with thousands of men in attendance, it is clear to see the strains and the unnatural conditions that men are required to face.

The same writer in *Medical Clinics*



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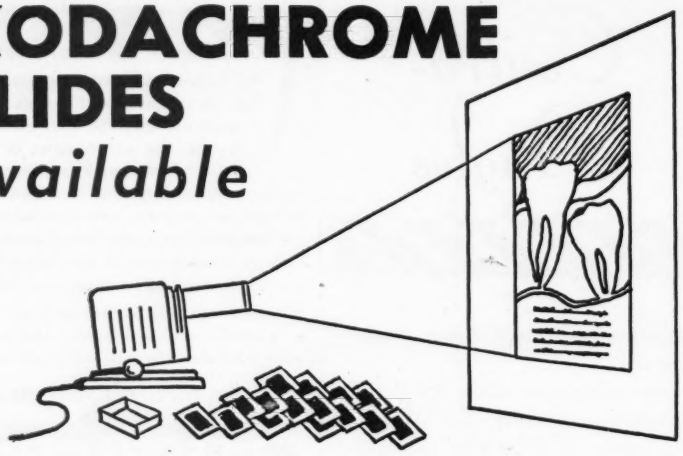

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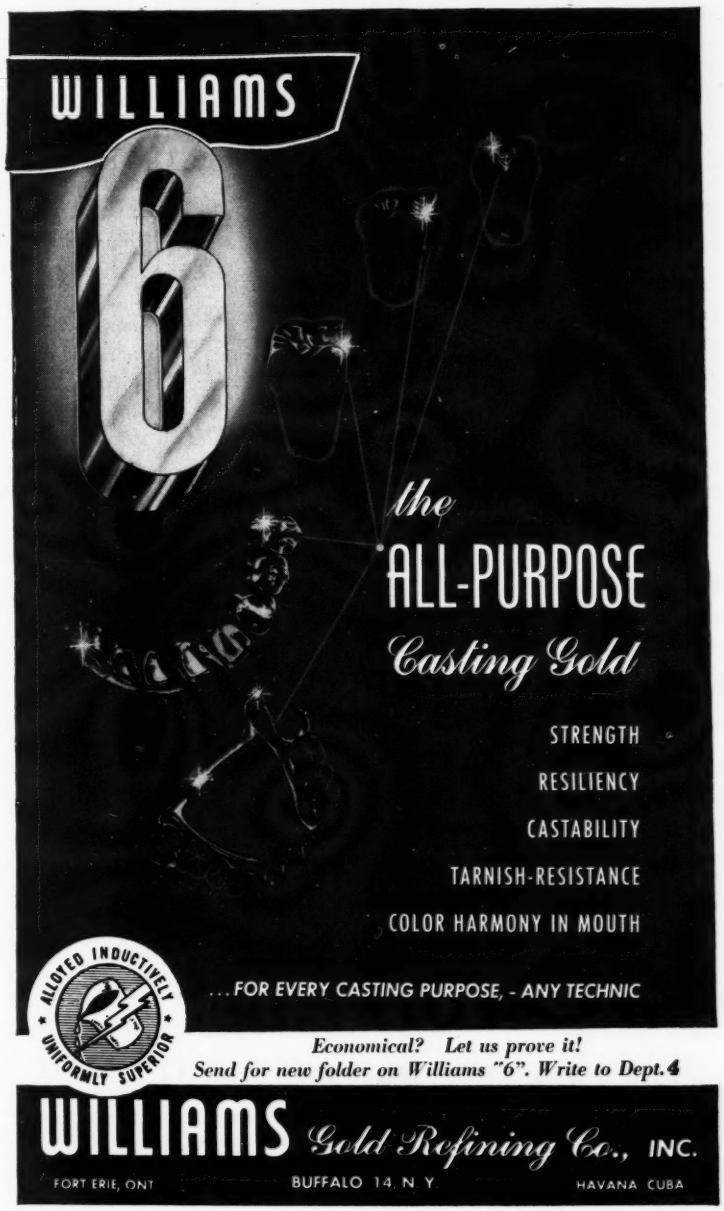
of North America said that between 1920 and 1947 the death rate from coronary disease for white males between 35 and 65 *doubled*. By observation within our own circle of friends we know that these figures are true. Fat has been suggested as one cause of atherosclerosis that leads to coronary degeneration. There are other, and probably worse, food offenders: refined sugar and refined white flour, for example. These two *chemicals* throw the *milieu intérieur* out of balance as can be demonstrated by blood examination. The calcium-phosphorus ratio, the blood sugar, the vitamin B reserves are disrupted by sugar and white flour. As the chemistry of the blood is changed the finely attuned mechanism of homeostasis is unbalanced. That means that the blood that goes to all parts is chemically inadequate and cannot satisfy the metabolic needs of billions of cells. It also means that the endocrine glands that manufacture hormones from this blood are required to turn out an inadequate or unsatisfactory product. We know that life is maintained by minute amounts of hormones from the endocrine system. We are all aware that small amounts of thyroxin, insulin, ACTH, adrenalin may be the difference between life and death, between health and disease.

We are aware that castration in either the man or the woman who is suffering from cancer often brings about a temporary remission of the disease. Surgical removal of the adrenal glands has the same effect. These results indicate that the hormones of the testes, ovaries, and adrenal cortex have an influence on malignant disease. It is also thought that excess amounts of growth hormone from the anterior pituitary may be a factor in both cancer and diabetes, and presumably a factor in any proliferative process.

In the series of articles on body chemistry that are being published in this magazine Doctor Melvin E. Page shows that the person who is inclined to excessive andricity is the one more likely to be stricken with the killing diseases. The constitutional physiologists, Draper and Sheldon, say the same thing when they point out that the mesomorphic body configuration with a temperamental constellation of somatotonia is more subject to the degenerative processes. In simple language that means that the muscular, full bodied, full blooded, assertive, aggressive mesomorph is more likely to die from a degenerative disease than is the slender thin bodied, thin blooded, reticent and retiring ectomorph. In fact, Sheldon suggests that the billions of individual cells have the same kind of morphologic and dynamic potential as has the body of which they are the part. The energy-consuming and energy-expanding mesomorph with his large body mass of bone, sinew, and blood is made up of billions of cells, each with the characteristic of accelerated metabolic activity. If this is true it is easy to see how the mesomorph, the masculine or andric man, burns himself out too soon. As Sheldon says, he has an expensive body to maintain.

Andricity suggests an excessive amount of hormone from the testes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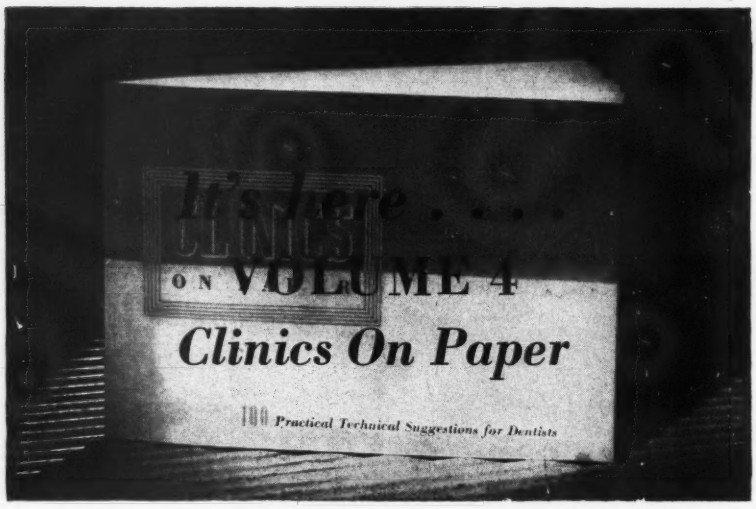

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and from the adrenal cortex. In turn, the gonads and the adrenal cortex are under control of the master gland, the anterior pituitary. One suggestion for slowing down the metabolic rate, the pace of living and for reducing androcity, would be to retard the action of the anterior pituitary. Doctor Page and other endocrinologists have suggested that small amounts of *female* sex hormone, estrogen, (about 3 to 5 rat units, or about 1/1000 of the amount considered to be a therapeutic dose) and small, 3 or 4-unit doses, of insulin (less than 1/10 the amounts used by diabetic patients) slow down the anterior pituitary. As a word of comfort to men, it should be said that from these small doses there is no danger of being demasculinized or of being denuded of the lively libido.

Another clue that is worth pursuing was uncovered by White and Ackerman in 1950 and has been recently revived by Marett and Vivas:

"In 1950, White et al. examined 600 hearts from men at autopsy for the amount of coronary sclerosis. One hundred hearts were selected consecutively in each of the six decades from 30 through 80. They showed that the degree of coronary sclerosis was not linearly related to age in man. It increases in the 30 through the 49-age group, reaching a maximum in the 50 through 59-age group, and thereafter remains at a fairly constant level. Ackerman et al. similarly examined 600 hearts from women. In those the average degree of sclerosis did not rise until the fourth decade but rose steadily from this point to the eighth decade where it leveled off. *It is in the fourth decade that ovarian activity begins to wane in most women.*"

These clues would suggest that in men, during the age of sexual activity from 30 to 59, the dangers of coronary sclerosis are greatest. In women, during the age of greatest sexual activity, until the menopause, they are protected from coronary sclerosis. This would indicate that testosterone encourages sclerosis and estrogen discourages sclerosis.

In a group of men who were given oral estrogens it was found that the

cholesterol and blood lipid levels were reduced. Some investigators, but not all, believe there is a correlation between cholesterol and coronary disease. In the living subject there is no way actually to examine and measure the degree of sclerosis of the coronary vessels.

A conscientious authority and acute statistician is the Metropolitan Life Insurance Company. In 1953 this opinion was expressed by this company:

"In the future the chronic diseases, particularly the cardiovascular conditions and the malignant neoplasms will loom even larger than they do now as major factors in morbidity and mortality."

Why should the subject of degenerative diseases be of concern to the dentist? For one reason they are certainly among the victims; likewise are their friends and patients. Dentists are conditioned to think in terms of prevention; more so than are physicians. The public has generally accepted the role of prevention in dentistry. It is to the credit of the dental profession that this fine job of public education has been done. Physicians have been neither interested nor effective in preventive medical programs. Public health programs have often been good; personal health projects have been in large part ignored by physicians.

Dentists have another advantage. They are the only practitioners that have the opportunity to see constantly the mucous membranes of the body and the hard tissues. To look at the mucous membrane the physician must use a speculum or an instrument of some sort and a light. All the dentist needs are his sharp eyes to behold the significant changes that are occurring in soft tissues. To look at bone, a hard tissue, the physician must cut through skin and muscle. All the dentist needs to examine calcified tissue are his sharp eyes.

I am not proposing that bone and tooth structure are embryologically or physiologically the same. I am merely pointing out that the morbidity of dental hard and soft tissues is not determined entirely by local conditions in the mouth. The metabolism and the vitality of *all* dental tissues are influenced by the blood and by saliva which is a product of the blood; and the blood is no more than *we make it* by complete and adequate nutrition.

If we wish to raise our sights and broaden our opportunities for human service, we will begin to think of oral medicine as being much more than lactobacilli to be counted, oral enzymes to be inhibited, fluorine to be imbibed. If we look beyond the degenerating teeth and oral soft tissues, we will observe a body that is degenerating in other parts and places. If we see that kind of vision and adjust our practice accordingly, we will truly be humanitarians. —E.J.R.

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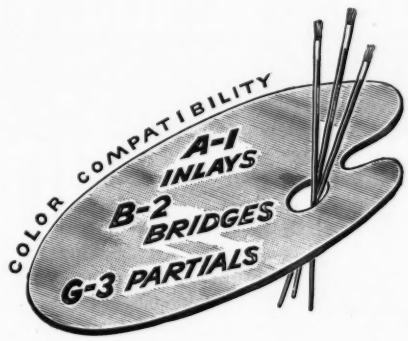

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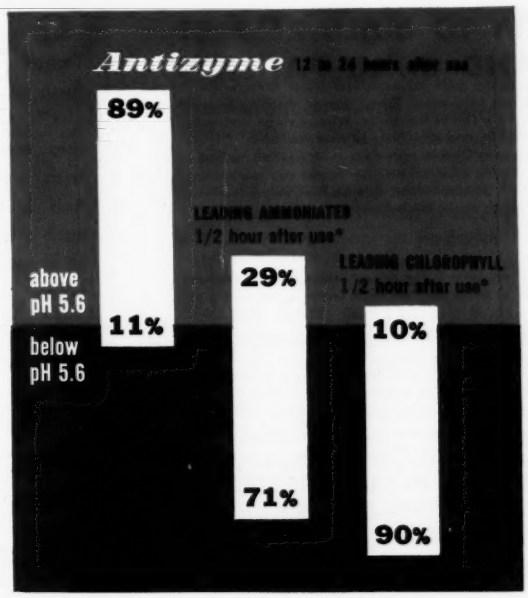
All day protection from the cariogenic pH zone (pH 5.5 and below) with Listerine Antizyme Tooth Paste

In 89% of caries-susceptible persons tested, Antizyme, with routine brushing, maintained a continuous plaque pH of 5.6 and above. *No dentifrice before this ever provided such extended caries protection.*

COMPARISON OF PLAQUE pH TESTED AFTER USE OF DENTIFRICE



**Studies of users of regular dentifrices indicate no lasting pH control after use.*

Listerine ANTIZYME is the only tooth paste available to your patients where every package of the brand contains a scientifically accredited anti-enzyme with 12 to 24 hour retention, 12 to 24 hour efficacy against decay acids.

This pH Comparison Chart shows that contrary to anti-enzyme claims made by other dentifrices not containing a long-lasting anti-enzyme ingredient (regular, ammoniated or chlorophyll) they furnish protection for ½ hour or less. LISTERINE ANTIZYME TOOTH PASTE contains an *all day* anti-enzyme, sodium dehydroacetate*—which is retained on tooth surfaces and combats decay acids continuously for 24 hours with routine twice-a-day brushing.

**A New Approach to the Problem of Dental Caries Control: J. Dent. Research (Aug.) 1953.*

LISTERINE **Antizyme** TOOTH PASTE

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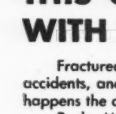
Other Uses:

OPEN FACE CROWNS: Later if the patient wants a more aesthetic result, it is a simple matter to make an open face crown by removing the labial.



JUMPING CROSS BITES: They are also proving very effective as a means of correcting locked anteriors.

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TO_____

(2) Wax heated in a spatula is touched to the cotton which becomes saturated.

(3) While the wax is still warm the cotton pellet is gently pushed by a blunt instrument into the canal to the proper depth. The excess dental floss is deflected from the field of operation.

Taking the Impression—(1) One-half unit of alginate impression material is mixed according to the manufacturer's directions.

(2) The mixture is permitted to flow down the side of the canal.

(3) An excess of material is poured around the external surface of the canal to facilitate removal of the impression and to obtain an accurate adaptation of the external portion of the ear insert.

Removing the Impression—The tissues in contact with the impression material are gently pulled away and the impression is removed by putting tension on the dental floss and on the mass external to the canal. A steady pull will remove the impression intact.

Preparing the Impression—(1) The wax-impregnated cotton is blended carefully to the alginate impression material by flowing wax to form the bond.

(2) A thin layer of wax is flowed over the entire surface of the alginate impression that will be in contact with tissue. This is to compensate for final polishing and to fill in any small artifacts.

Investing the Impression—(1) Dental stone is mixed and agitated into the bottom section of a crown and bridge flask. Additional stone is also poured over the prepared impression surfaces that will be embedded in the stone of the bottom section and agitated.

(2) The impression is then set in the stone, leaving the flat external part with the female metal insert (which is part of the hearing aid) flush with the surface of the stone.

(3) After the stone has set, the bottom section of the flask is painted with a separating medium. The top half is set on the lower section in such a way as to provide clean metal-to-metal contact of the adjoining surfaces.

(4) Stone is mixed and agitated into the upper half until the flask is full; the stone is then allowed to set.

Packing and Processing—The two "halves" of the flask are separated and the alginate pattern removed mechanically. Hot water is flushed into the mold to remove all traces of wax or alginate particles. The mold is dried and coated with an accepted substitute for tin foil. The following steps are then taken for packing:

(1) Clear methyl methacrylate polymer and monomer are mixed according to the manufacturer's instructions. The dough is ready to pack when it no longer will adhere to a clean steel instrument. Contaminating the mixture is to be avoided at all stages.

(2) The lower half of the flask is overpacked, so that when the flask is pressed together with moist cellophane between the two halves, the exess forms "flash." The "flash" is removed and the flask is closed again with the cellophane in place. This procedure is repeated until no "flash" remains.

Processing Procedure—The follow-

ing is the method for processing:

(1) The flask is put into a press and is ready for curing. Still in the press, the flask is put in a water bath at room temperature with the water level above the top of the flask. The temperature of the water bath, which is thermostatically controlled, is raised approximately 1.8° Fahrenheit per minute.

(2) The bath is permitted to boil for thirty minutes before the flask is removed.

(3) The flask is next immersed in cold water for fifteen minutes and then dismantled.

Finishing and Polishing—(1) Any "flash" and protruding defects are trimmed off with mounted stone, care being taken to avoid altering the original contours.

(2) The "auditory" canal is cut through the plastic material with a large round bur in a straight handpiece.

(3) The "canal" is finished and smoothed with stones and with string impregnated with pumice. For final polishing a soft ragwheel is used with wet flour pumice under light pressure. The engine is run at slow speed to avoid "burning" the surface of the acrylic.

(4) The irregular surfaces are similarly polished but with felt cones and fine bristle brushes.

(5) A high surface polish is imparted with dry ragwheels, cones, and brushes, and whiting.

Summary

Comfortable plastic stents (or inserts) for hearing aids can be made by using the technique described. The individualized prosthesis is accurately adapted to the ear canal, so that there are no irritating pressure points. The material used is practically nondestructible. Scratches, or etching by organic solvents, can be removed by polishing. This precisely fitted stent promises greater comfort to the increasing number of wearers of hearing aids.

Adapted from *U. S. Armed Forces Medical Journal* **4**:No. 9. 1301-1306 (Sept.) 1953.

Amco-Facts

P. F. Posterior Filling, where it has been presented, seems to have excited more controversy than any other new product in years. This seems to be the result of the claims which are admittedly great. Let us go over them.

First comes adhesion. We say it adheres to tooth structure without undercuts. We ask you to believe that but do not expect you to. So we ask you to investigate this claim.

Grind a side off an extracted tooth and flow on some P. F. Let it set under water if you like. Now soak it, dry it, freeze it, boil it. Certainly it eventually comes off if you beat it hard enough. But what other cement or filling material will even attach itself to tooth structure at all?

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For the above two reasons P. F. can be used for posterior restorations where amalgam would never hold or last. This is substantiated by the reports of hundreds of dentists.

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You probably wonder why we are so confident. It is because P. F. has largely overcome the drawbacks of the acrylic filling. There is comparitively little methyl-methacrylate in P. F. Take a look at what makes P. F.

1. Methyl-methacrylate. Insolubility, set, manipulation.
2. Adhesive resin. Adherence to tooth structure.
3. Ores, hard and tooth-like. Reduce coefficient of expansion and contraction, wear resistance, color.
4. Molectite. Hardness.
5. Know-how. Patent application. And the interest of the profession.

We offer you an opportunity to investigate our claims. Send us one dollar. We will forward you a generous sample of P. F. If you already have P. F. the same offer applies to PEARLON, an anterior filling material of the same formula. Naturally it is color stable too.

1-54

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Trigeminal Neuralgia and Mandibular Joint Dysfunction

EDMUND A. SMOLIK, M.D.
and
E. J. HEMSTEAD, D.D.S.

Positive Role of Dentist

In a reconsideration of the trigeminal area and its relation to the masticatory apparatus the dentist no longer appears in a negative role but assumes the stature of an ancillary specialist in medicine. In general there has been little regard for the examination or consideration of the occlusion of natural teeth, and more so, of artificial dentures. The emphasis on occlusion and function of the temporomandibular joint as one unit of the masticatory apparatus is of paramount importance.

Symptom Complex Characterized by Pain—Costen's description of a so-called temporomandibular joint symptom complex characterized by pain in the temporomandibular joint and frequently associated with pain along the tongue and mandible is impressive.

Explanation of Pain—Costen's explanation of this pain is that the malocclusion of the teeth produces a shift of the condylar mechanism, and the condyle or its capsular components and the diseased tissues associated with this shifting produce tension on the chorda tympani and on branches of the auriculotemporal nerve which innervates the capsular area.

Pain Fibers in Chorda Tympani Questioned—Some students feel that the chorda tympani could not be thus impinged on, and also that from anatomic and neurophysiologic evidence the chorda tympani does not carry pain fibers.

Chorda Tympani Visualized—In an extraordinary opportunity Costen, Clare, and Bishop were able to visualize the chorda tympani nerve in a patient who had had a mastoidectomy in which the drum was absent. With a camel hair electrode they were able to stimulate the chorda tympani nerve and produce pain along the anterior two-thirds of the tongue, thus demonstrating that the chorda tympani does carry pain.

Alteration of Bite Mechanism

The thought occurred that if we altered the bite in patients suffering from trigeminal neuralgia they might be saved from surgery which in some instances does produce unfortunate results such as paresthesia, corneal disturbances, and sometimes, peripheral seventh nerve palsies.

Treatment Reversed—Many of these patients had had their teeth extracted in the past and the dentist appeared as a culprit; he took out the teeth in the pain area, when actually the idea is to put teeth back in and alter the functional situation.

Conservative Course Affords Relief—Correction of the temporomandibular joint dysfunction will give relief in many instances. Should failure or expediency dictate, various well-established neurosurgical procedures can then be instituted. Such a course of conservatism enables the patient to obtain relief without loss of sensory, or, possibly, motor function.

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Referred Patients Observed—Within the past three years 54 patients, all of whom were referred with a diagnosis of trigeminal neuralgia, have been observed. By careful elicitation of the history, examination of the dental state, together with proper conservative construction of the mechanics of the temporomandibular joint, relief has been effected in 15 cases of major neuralgia with four failures and in 21 cases of minor neuralgia with seven failures. Three patients who had had posterior rhizotomy did not respond. Seven others still have occasional episodes of discomfort.

Program for Rehabilitation

In general the following procedure in rehabilitation is adopted:

1. Many of the patients are in a state of acute distress and emotional tension. They are given sedatives in the form of mild barbiturates with codeine or if necessary are hospitalized.

2. A detailed medical history and record of environmental background are obtained, together with a description of subjective symptoms and discomfort.

3. Complete radiograms are made of the entire mouth, the dental structure, and temporomandibular joint. Study models of the natural dentition or of artificial dentures are obtained. In patients with dentures a complete history of denture experience is elicited with careful scrutiny as to the condition and quality of the set worn. Intraoral and extraoral photographs are taken of the patient's occlusion, bite, and centric and vertical dimensions.

4. The models of the patient's teeth are mounted and studied.

5. Dental radiograms are interpreted but extractions are deferred temporarily (unless teeth are infected) so that healing does not interfere with reconstruction. Likewise the loss of additional natural tooth support will increase the subjective symptoms.

6. Condyle radiograms are studied with reference to position of occlusion.

7. Facial features are studied to determine the effects of occlusal wear.

Conclusions

It has been observed that many patients describing sharp, shooting, knifelike pains throughout the face, produced in the act of washing, shaving, combing the hair present a clinical picture of severe dental malocclusion. There is not a full complement of teeth and those present are in a condition of abrasion and attrition. In edentulous cases there is a loss of vertical dimension.

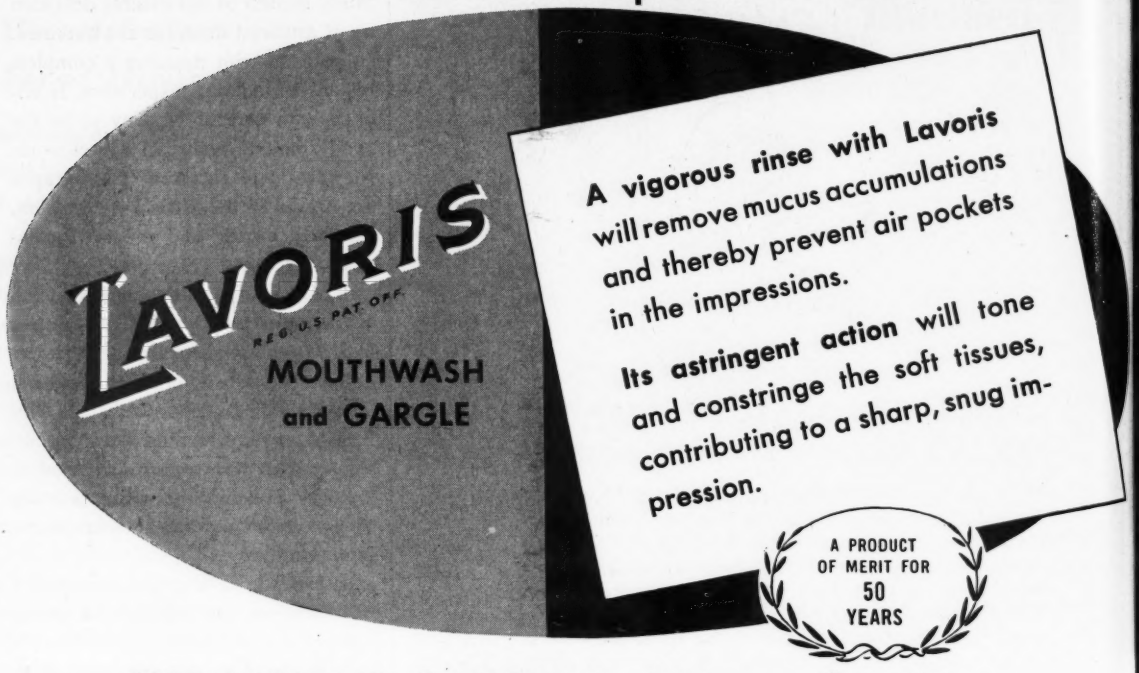
Radiograms reveal the condyle in a posterior-superior displacement against the glenoid fossa.

Treatment consists of (1) increasing the vertical dimension, (2) replacing missing teeth, and (3) establishing a new centric position.

The ideal reconstruction is not always obtainable but the aim is to coordinate the occlusion so that there will be an existing harmonious relationship between (1) movements of the teeth, (2) the condyles within the glenoid fossa, and (3) the musculature.

Adapted from *Postgraduate Medicine* **12**:420-426 (Nov.) 1952.

For Better Impressions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